Service Manual

Colour Television

TC-1635UR/TC-1637DR

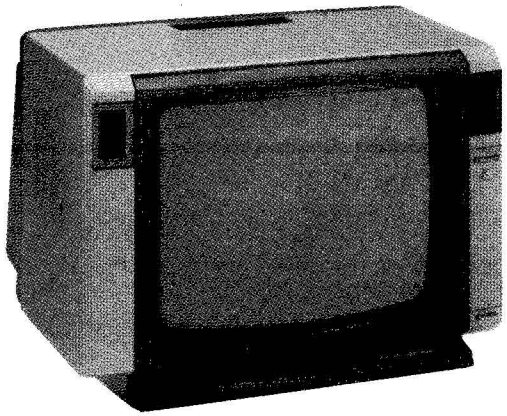
Chassis No. U4

WARNING

Only components supplied by the manufacturer are recommended for this set. If other than recommended parts are used this will result in subspecification performance. Failure to comply could result in guarantee being invalidated.

WARNUNG

Die in der Ersatzteilliste mit oder bezeichneten Bauelemente durfen ausschließlich durch die vom Hersteller angegebenen Originalteile ersetzt werden. Beim Ersatz anderer Bauteile durch handelsübliche nicht gleicher Spezifikation kann eine Funktionverschlechterung eintreten. Die dadurch entstehenden Mängel oder Fehler fallen dann nicht unter die Garantieleistung.



Specifications (information in brackets refers only to TC-1637UR)

Power Source:	220 volts. 50Hz, AC
Power Consumption:	80 W Normal
Aerial Impedance:	75Ω unbalanced coaxial type
Receiving Channels:	VHF CH2-CH12 (S1-M9)
	UHF CH21-CH69
Intermediate Frequency:	Video 38.9 MHz
	Sound 33.4 MHz
	Colour 34.47 MHz
Semiconductors:	63 transistors (58 transistors)
	88 diodes (88 diodes)
	1 negative thermistor
	1 positive thermistor
	17 IC's (17 IC's)
Picture Tube:	38 cm 16 inch measured diagonally
	90° deflection Picture Tube
Anode Voltage:	25kV
Speaker:	Woofer 10 cm Round
	Tweeter 7.5 x 4.5 Oval
Sound Output:	2.5 watts maximum
Audio Terminals:	Headphone Jack
	External Speaker Socket
Automatic Circuits:	Automatic Search
	Automatic Gain Control
	Automatic Colour Control
	Automatic Frequency and Phase Control
	Automatic Brightness Limiter
	Automatic Degaussing
	Horizontal AFC
	Chopper Type AVR
	Noise Canceller
Dimensions:	Height: 350 mm
	Width: 500 mm
	Depth: 430 mm
Net Weight:	15.1 kg.

Technische Daten (Werte in Klammern gelten nur für TC-1637DR)

Netzspannung:	220 V Wechselspannung, 50 Hz
Leistungaufnahme:	80 W Normale
Antennenanschluß:	DIN-Buchse, ko axial, 75 Ohm
	Impedanz unsymmetrisch
Empfangskanäle:	VHF CH2-CH12 (S1-M9)
	UHF CH21-CH69
Zwischenfrequenzen:	Bildträger, 38,9 MHz
	Tonträger, 33,4 MHz
	Farbhilfsträger, 34,47 MHz
Halbleiter:	63 (58) Transistoren
	88 (88) Dioden
	1 Thermistor, NTC
	1 Thermistor, PTC
	17 (17) IC's
Bildröhre:	38 cm Schirmdiagonale
	90 Ablenkung
Hochspannung:	25 kV
Lautsprecher:	Tiefton 10 cm round
Tonausgangsleistung:	2.5 W (Maximalleistung)
Ausgänge (Ton):	Kopfhörerbuchse, Klinke 6,3mm ∅
Automatikschaltungen:	Automatischer Suchlauf
	Automatische Verstärkungsregelung.
	Automatische Farbverstïkungs regelung.
	Automatische Frequenz- und Phasennachstimmung
	Automatische Strahlstrombegrenzung.
	Automatische Bildröhren-Entmagnetisierung.
	Automatischer Zeilenfang
	Automatische Bildhöhenregelung.
	Rauschunterdrückung (ohne Bildträger)
Abmessungen:	350 x 500 x 430 (HxBxT) mm
Gewicht:	15.1 kg

CONTENTS

	Page
ABBREVIATIONS	2
SAFETY PRECAUTIONS	3
DISASSEMBLY INSTRUCTIONS	5
FIELD ADJUSTMENT	9
BENCH SERVICE ADJUSTMENT	11
EXPLODED VIEWS	15
BLOCK DIAGRAM	17
SCHEMATIC DIAGRAM	19
CIRCUIT BOARD VIEWS	25
REPLACEMENT PARTS LIST	30

INHALT

	Seite
ABKÜRZUNGEN	2
SICHERHEITSVORKEHRUNGEN	3-4
AUSBAU-ANLEITUNG	5-8
EINSTELLARBEITEN AUSSERHALB DER WERKSTATT	9-10
WERKSTATT-EINSTELLARBEITEN	11-14
EXPLOSIONS – ZEICHNUNGEN	15-16
LEITERPLATTEN IM BLOCKSCHALTBILD	17-18
SCHALTBILD	19-24
ABB. DER LEITERPLATTEN	25-30
ERSATZTEILLISTE	30

ABBREVIATIONS

ABL	Automatic Brightness Limiter
ACC	Automatic Colour Control
AFC	Automatic Frequency Control
AGC	Automatic Gain Control
APC	Automatic Phase Control
AVR	Automatic Voltage Regulation
BPA	Bandpass Amplifier
BS	Bias Supply
CRT	Cathode Ray Tube
CSG	Chroma Sweep Generator
CW	Continuous Waveform
CWG	Continuous Waveform Generator
DY	Deflection Yoke
FBT	Flyback Transformer
1H, 2H	1. or 2. Horizontal scanning periods
OSP	Oscilloscope
SMG	Sweep and Marker Generator
VTVM	Vacuum Tube Volt Meter
DVM	Digital Voltmeter

CAUTION

1. THE POWER SUPPLY CABLE SHOULD BE UNPLUGGED FROM THE AC SOURCE, WHEN THE RECEIVER IS NOT IN USE.
2. Potentials as high as 25kV are present when this receiver is operating. Operation of the receiver outside the cabinet or with the back removed involves a shock hazard from the receiver power supplies. Servicing should not be attempted by anyone who is not thoroughly familiar with the precautions necessary when working on high voltage equipment.
   Always discharge the picture tube anode to the receiver chassis before handling. The picture tube is highly evacuated and if broken, glass fragments will be violently expelled.

ABKÜRZUNGEN

ABL	Automatische Strahlstrombegrenzung
ACC	Automatische Farbverstärkung
AFC	Automatische Frequenznachstimmung
AGC	Automatische Verstärkungsregelung
APC	Automatische Phasenregelung
AVR	Automatische Spannungsregelung
BPA	Bandpass-Verstärker
BS	Vorspannungserzeugung
CRT	Kathodenstrahlröhre
CSG	Farb-Kanal – Wobbler
CW	Sinus-Träger
CWG	Sinusgenerator
DY	Ablenkspule
FBT	Zeilentrafo
1H, 2H	Zeitdauer einer oder zweier Zeilen (64 μs bzw. 128 μs)
OSP	Oszillograf
SMG	Wobbler mit Markengeber
VTVM	Röhrenvoltmeter
DVM	Digitalvoltmeter

VORSICHT!

1. WENN DAS GERÄT FÜR LÄNGERE ZEIT AUSSER BETRIEB BLEIBEN SOLL IST DER NETZSTECKER VORSORGLICH AUS DER STECKDOSE ZU ENTFERNEN.
2. Während des Betriebes entstehen im Gerät Spannungen bis zu etwa 25 kV. Der Betrieb Gerätes ausserhalb seines Gehäuses oder mit abgenommener Rückwand bringt deshalb die Gefahr elektrischer Schläge mit sich. Servicearbeiten sollten nur von solchen Personen ausgeführt werden, die mit den Vorsichtsmassnahmen vertraut sind, die für Geräte mit Hochspannung gelten. Vor Arbeiten an der Bildröhre ist deren Anode stets gegen das Chassis zu entladen.
   Die Bildröhre steht unter Hochvakuum und bei Beschädigung des Kolben kommt es häufig auf Implosion, bei der Glassplitter mit hoher Geschweideg keit in jede Richtung geschleudert werden können.

SAFETY PRECAUTIONS

WARNING: Since some parts of the receiver (live parts) are connected to one side of the AC supply during operation, service should not be attempted by anyone unfamiliar with the precautions necessary while working on this type of equipment. The following precautions should be observed:

1. An isolation transformer should be inserted between the power line and the AC supply before any (dynamic) service is performed on these circuits.

2. If an isolation transformer is not available and live parts must be operated directly from the AC supply, the power plug should always be inserted in the correct polarity, observing the colour code on the mains cable.

3. Do not install, remove, or handle the picture tube in any manner unless shatter-proof goggles are worn. People not so equipped should be kept away while picture tubes are handled. Keep picture tube away from the body while handling.

4. When service is required, observe the original cable dress. Extra precautions should be given to assure correct cable dress in the high voltage circuitry area. Where a short circuit has occurred, replace those components that indicate evidence of overheating. Always use the manufacturers replacement component.

5. When replacing a chassis in the cabinet, always be certain that all the protective devices are put back in place, such as non-metallic control knobs, insulating fish-papers, adjustment and compartment covers or shields, isolation resistor-capacitor networks, etc.

6. Before returning any receiver to the customer, the Service Technician should be sure that no protective device built into the instrument by the manufacturer has become defective, or inadvertently damaged during servicing. Therefore, the following checks are recommended for continued protection of the customer and Service Technician.

The nominal High Voltage for a particular TV Chassis is shown on the schematic diagram at zero beam current (minimum brightness), from a 220V AC power source. The high voltage stated must not, under any circumstances be exceeded. Each time a television receiver utilizing the chassis covered by this Service Data, requires servicing, measurements should be made at minimum and normal viewing settings of the brightness control. It is recommended the reading obtained from above procedure be recorded as a part of the service record for the television receiver.

SICHERHEITSVORKEHRUNGEN

WARNUNG: Da Teile des Empfängers (Netzteil) während des Betriebes einseitig direkt mit dem Netz verbunden sind, dürfen Servicearbeiten, nur von Fachpersonal ausgeführt werden, das mit den Sicherheitsvorkehrungen, die diese Technik verlangt, vertraut ist.
Folgende Vorsichtmaßnahmen sind zu beachten:

1. Zwischen Netz und Gerät ist ein Trenntrafo zu schalten, wenn Arbeiten unter Spannung ausgeführt werden müssen.

2. Steht ein Trenntrafo nicht zur Verfüng und müssen dennoch Arbeiten unter Spannung ausgeführt werden, so ist auf richtige Lage des Netzsteckers zu achten, bei der das Chassis gegenüber Schutzerde nicht auf Phase liegt (Phasenprüfer).

3. Aus- und Einbau der Bildröhre darf nur erfolgen, wenn eine bruchsichere Schutzbrille getragen wird. Personen ohne Schitzbrille müssen sich während dieser Arbeit vom Gerät entfernen. Bildröhren sollen möglichst fern vom Körper gehalten werden.

4. Bei Servicearbeiten ist besonderes Augenmark auf die Leitungsführung zu legen, speziell im Hochspannungsteil.
   Wo ein Kurzschluss aufgetreten ist, sind alle Teile zu erneuern, die Spuren von Überhitzung zeigen. Zwingend ist dies für —Teile vorgeschrieben.

5. Wenn das Chassis wieder in das Gehäuse eingebaut wird, muß sichergestellt sein, das alle Schutzeinrichtungen, wie isolierende Bedien- und Einstellknöpfe, Isolierungen, Abschirmungen und Abdeckungen von Justierpunkten und Baugruppen usw. wieder an der richtigen Stelle montiert sind.

6. Bevor das Gerät zum Kunden zurückgebracht wird, muß der Servicetechniker prüfen, ob irgendeine Schutzinrichtung defekt oder bei Reparaturarbeiten beschädigt worden ist. Zur Sicherheit des Kunden und des Servicetechnikers sind folgende Prufungen durchzuführen:

Im Schaltbild ist der Wert der Hochspannung bei Strahlstrom Null (=Helligkeitsregler auf Minimum) für eine Netzspannung von 220 V angegeben. Die Hochspannung darf diesen Wert unter keinen Umständen überschreiten. Bei jeder Reparatur ist daher die Hochspannung bei normaler und minimaler Einstellung des Helligkeitsreglers zu messen. Es empfiehlt sich, diese Messwerte im Reparaturbericht festzuhalten. Damit garantiert der Servicetechniker dem Kunden, daß.

This will afford assurance to the Service Technician that:
1. The High Voltage is within limits specified.
2. The X-Radiation is at a minimum.

If the High Voltage measures abnormally high, or is not functioning properly, the television should be restored to normal operation through servicing. It is important to use an accurate and reliable high voltage meter.

1. LEAKAGE CURRENT COLD CHECK

With the AC plug remove from 220V AC source, place a shorting jumper across the two plug prongs. Turn the instrument's AC switch on. Using an ohmeter, connect one lead to the jumpered AC plug and touch the other lead to each exposed metal part (antenna, handle bracket, metal cabinet, screwheads, metal overlays, control shafts, etc.), particularly any exposed metal part having a return path to the chassis. Exposed metal parts having a return path to the chassis should have a minimum resistance reading of 540kΩ and exposed metal parts not having a return path to the chassis should indicate an open circuit.

2. LEAKAGE CURRENT HOT CHECK

Plug the AC power supply cable directly into a 220V AC socket (do not use an isolation transformer for this check). Using two clip leads of sufficient length, place a 2kΩ 10 watt resistor, in with an exposed metal cabinet part and a known earth ground (water pipe, conductor, etc.). Move the resistor connection to each exposed metal part (antenna, handle bracket, metal cabinet, screwheads, metal overlays, control shafts, etc.), particularly any exposed metal part having a return path to the chassis, and measure the potential across the resistor. Now reverse the plug in the AC socket and repeat each measurement. Any potential measured must not exceed 1.4 volt RMS.

X-RADIATION PRECAUTIONS

The primary source of X-Radiation in television receivers is the High Voltage section E.G. picture tube and high voltage rectifier. Tubes and solid state devices utilized in the above functions are especially constructed to limit X-Radiation emissions. For continued X-Radiation protection, the replacement must be the same type as the original, including suffix letter, or an approved type.

NOTE:

After servicing, all clamps should be replaced and all wiring correctly repositioned before returning to customer.

1. die Hochspannung innerhalb der spezifizierten Grenzen liegt und
2. daß die Röntgenstrahlung typenentsprechend minimal ist.

Weicht die Hochspannung von den Sollwerten ab oder zeigen sich sonstige Abnormitäten, so muß diese Ursache unbedingt beseitigt werden.

Est is wichtig, dass ein genaues und zuverlässiges Messgerät zur Hochspannungsmessung verwendet wird.

1. ISOLATIONSPRÜFUNG OHNE NETZANSCHLUSS

Der Netzstecker ist aus der Steckdose zu ziehen und seine beiden Stifte sind kurzzuschliessen. Nun ist bei eingeschaltetem Gerät der Ohmwert zwischen den Steckerstiften und allen zugänglichen Metallteilen (Antenne, Tragegriff, metallische Gehäuseteile, Potentiometer- und Schalterachsen, Schraubenköpfe usw.) zu messen.

Soweit diese Teile eine Rückleitung zum Chassis haben, muss der Widerstandswert mindestens 54o Kiloohm-betragen. Bei allen anderen muß er unendlich sein.

2. ISOLATIONSPRÜFUNG IM BETRIEBSZUSTAND

Nach Entfernen des Kurzschlusses (s. 1. Isolationsprüfung) ist das Gerät ohne Trenntrafo an das Netz anzuschliessen. Einen Widerstand von 2 k Ohm. 10 W einseitig an eine gute Erde (Wasserleitung, Zentralheizung o.ä.) anschliessen. Die andere Seite nacheinander nit allen zugänglichen Metallteilen (s. 1. Isolationsprüfung) verbinden. Dabei jedesmal den Spannungsabfall über den Widerstand messen. Anschliessend den Netzstecker umdrehen und diese Prüfungen wiederholen. In keinem Fall darf eine Spannung größer als 1.4V ff. sein.

SICHERHEITSMASSNAHMEN GEGEN RÖNTGENSTRAHLUNG

In erster Linie geht in einem Fernsehgerät die Röntgenstrahlung von der Bildröhre aus. Durch konstruktive Massnahmen es Herstellers ist diese Strahlung auf ein Minimum herabgesetzt. Um dies auch weiterhin zu gewährleisten, dürfen nurgleiche Originalersatzteile verwendet werden.

Anm.:

Vor Wiederauslieferung an den Kunden nach einer Reparatur müssen alle Klammern und Leitungen wieder im Originalzustandsein.

CHASSIS DISASSEMBLY INSTRUCTIONS
DEMONTAGE-ANLEITUNGEN

IMPORTANT:

This model has a silver finish cabinet and because of this it is highly susceptible to scratches and marks. Whenever servicing is carried out a rubber or foam mat should be used to minimise this risk.

HOW TO REMOVE REAR COVER

1. Remove 6 screws Ⓐ as in fig. 1.
2. Pull the rear cover toward you.

IMPORTANT

When the rear cover is removed, the chassis is then free to move. Care must be taken to ensure that the chassis does not slide from its mountings and become damaged.

WICHTIGER HINWEIS

Dieses Modell ist mit silberfarbiger Oberfläche ausgestattet, die natürlich empfindlicher für Kratzer und Schrammen ist. Bei jeder Servicearbeit ist deshalb eine Gummi- oder Schaumstoffmatte unterzulegen, um die Beschädigungsgefahr klein zu halten.

ENTFERNUNG DER RÜCKWAND

1. Die 6 Schrauben Ⓐ entfernen (Abb. 1).
2. Rückwand nach hinten abziehen.

ACHTUNG

Nach Abnahme der Rüchwand ist das Chassis frei und kann vorwärts/rückwärts verschoben werden, darf jedoch dabei nicht aus der Führing herausgleiten und beschädigt werden.

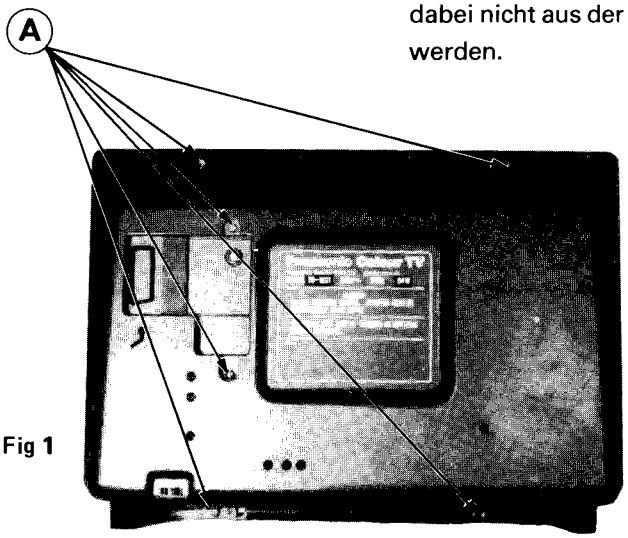


Fig 1

HOW TO MOVE CHASSIS INTO SERVICE POSITION

1. Remove the back cover.
2. Turn on the TV on its side (using a protective mat) as shown in fig. 2.
3. Release the mains lead from housing Ⓑ (Fig. 2).
4. Slide the chassis out as shown in Fig. 2.

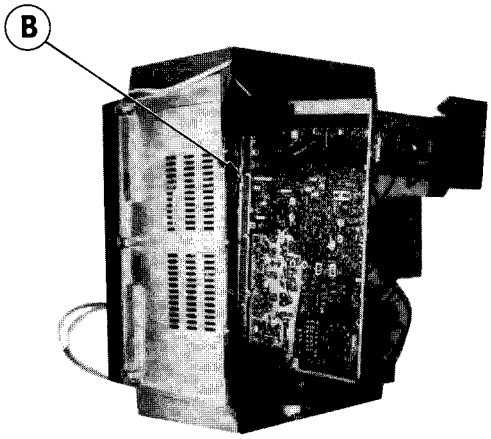


Fig 2

IMPORTANT

If the chassis is removed from the TV the weight of the CRT may cause the cabinet to tilt forward.

CHASSIS IN SERVICE-POSITION BRINGEN

1. Gerät unter Benutzung einer Gummi- oder Schaumstoff-
2. Unterlage gem. Abb 2 auf die Seite legen.
3. Netzkabel aus der Zugentlastung Ⓑ herausnehmen.
4. Chassis entspr. Abb. 2 Herausziehen.

ACHTUNG

Durch die Gewichtsverteilung der Bildröhre kann das Gerät nach Entnahme des Chassis frontlastig werden und auf den Bildschirm stürzen.

HOW TO MOVE "B" (VERTICALLY MOUNTED) CIRCUIT BOARD INTO SERVICE POSITION

1. Move chassis into service position.
2. Remove the two screws Ⓒ as shown in fig. 3.
3. Hinge "B" circuit board downwards into service position (See fig. 3).

LEITERPLATTE „B" (VERTIKAL EINGEBAUT) IN SERVICE-POSITION BRINGEN

1. Chassis in Service-Position bringen.
2. 2 Schrauben Ⓒ entfernen (s. Abb. 3).
3. Platine „B" in Service-Position herunterklappen (s. Abb. 3).

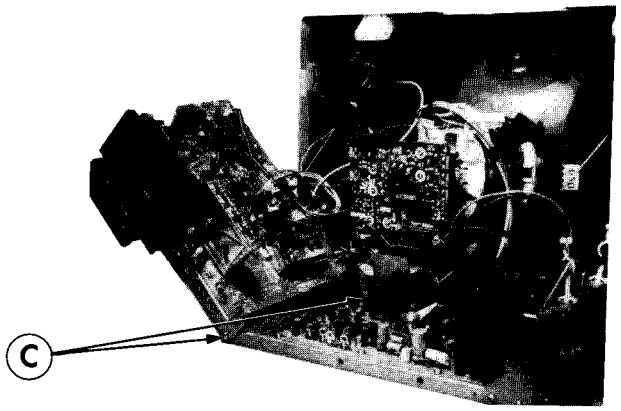


Fig 3

HOW TO MOVE CONTROL BLOCK INTO SERVICE POSITION

1. Move chassis into service position.
2. Remove the five screws Ⓓ as shown in fig. 4.

BEDIENTEIL IN SERVICE-POSITION BRINGEN

1. Chassis in Service-Position bringen.
2. 5 Schrauben Ⓓ entfernen (s.Abb. 4).

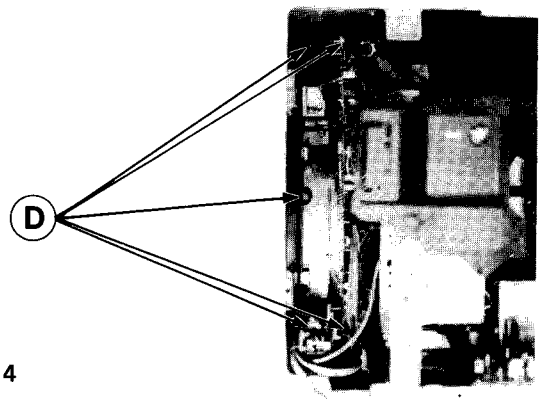


Fig 4

3. Slide the control block gently out and place into the position shown in fig. 5 or fig. 6.

3. Bedienteil vorsichtig herausziehen unud gem. Abb. 5 oder 6 (entspr. dem Modell) in Service-Stellung bringen.

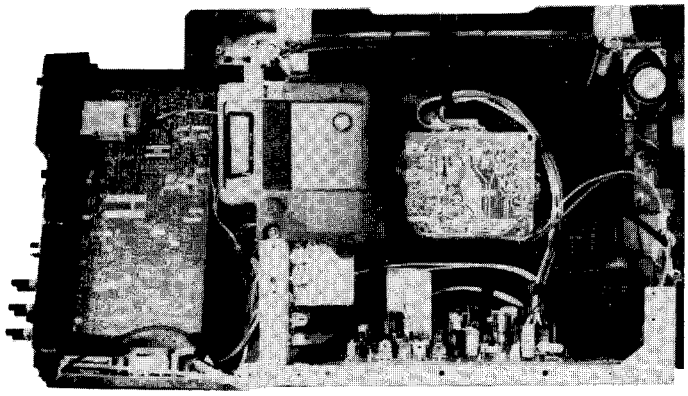


Fig 5

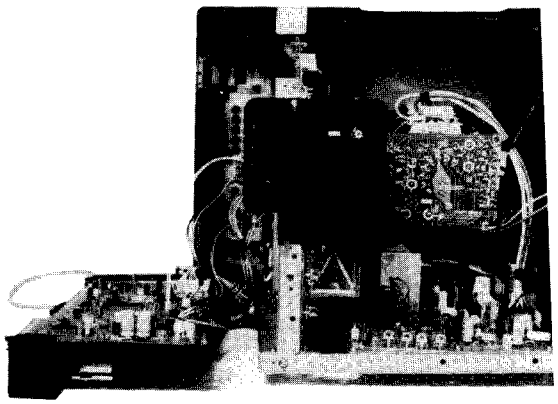


Fig 6

HOW TO MOVE THE "U" CIRCUIT BOARD INTO SERVICE POSITION

1. Remove the three screws (E) shown in fig. 7.

LEITERPLATTE „U" IN SERVICE POSITION BRINGEN

1. 3 Schrauben (E) entfernen (s.Abb. 3).

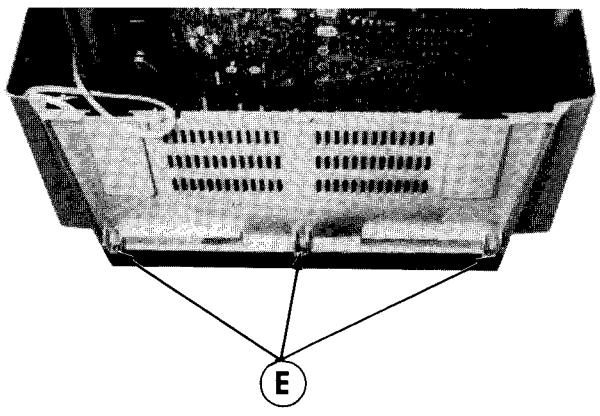


Fig. 7

2. Remove the three screws (H) shown in fig. 7a from the bottom of the inside of the cabinet.

2. 3 Schrauben (H) entspr. Abb. 7 entfernen.

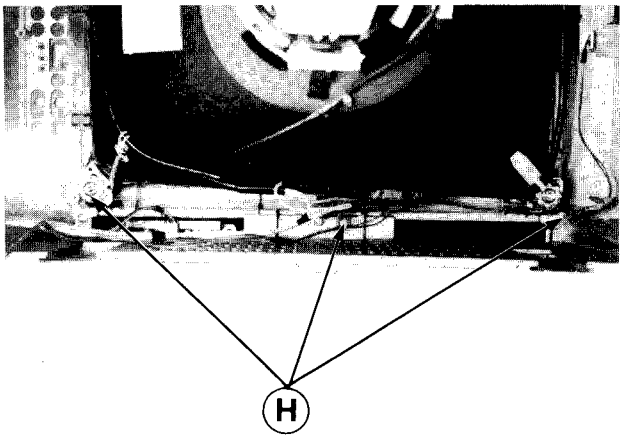


Fig 7a

3. Slide the front foot (1) of the set out as shown in fig. 8 exposing the "U" circuit board (J)

3. Gemäß Abb. 8 vorn unterhalb des Gerätes die Stützleiste (I) nach vorn herausziehen, wodurch die "U" -Leiterplatte zugängig wird (J) .

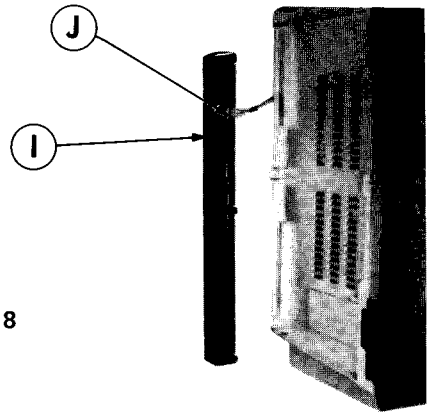
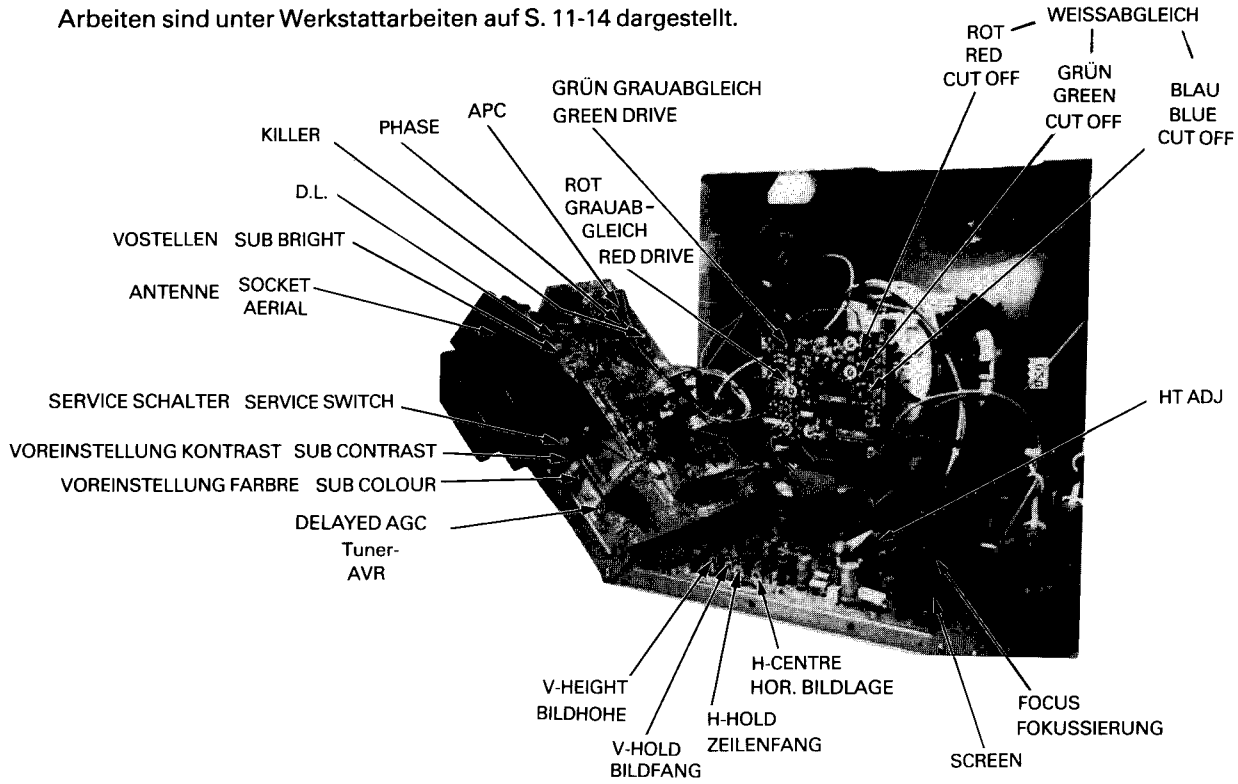


Fig 8

FIELD ADJUSTMENT
EINSTELLARBEITEN AUSSERHALB DER WERKSTATT

The adjustments listed in this section do not require any specialised equipment to complete: More critical adjustments requiring greater accuracy are listed in the "BENCH SERVICE ADJUSTMENT" Section on pages 11, 12, 13 and 14.

Die hier aufgeführten Service-Arbeiten lassen sich mit geringem Aufwand ohne Spezialgeräte durchführen. Die aufwendigeren Arbeiten sind unter Werkstattarbeiten auf S. 11-14 dargestellt.



A. + 119 V LINE ADJUSTMENT

1. Set receiver to receive normal picture.
2. Set V. Hold and H. Hold so that picture is locked.
3. Set brightness, contrast and colour controls to receive normal picture.
4. Connect voltmeter (300V DC range) between TPE 1 and chassis. Adjust R808 (+B adjust) for a reading of 119V ± 1V.

B. HORIZONTAL CIRCUIT ADJUSTMENT

1. Receive test card pattern and AFC on. Short TPE9 to ground.
2. Turn H-hold control to stabilize pattern and remove shorting jumper.
3. Adjust horizontal centre control (R517) so that centre of pattern is located at centre of screen.
4. Adjust width control (L551) for correct picture size.

C. VERTICAL CIRCUIT ADJUSTMENT

1. Receive test card pattern.
2. Adjust vertical centre plug so that pattern centre is located at screen centre.
3. Adjust height control (R409) for picture of correct size.

A. VERSORGUNGSSPANNUNG + 119 V EINSTELLEN

1. Gerät für Empfang eines FS-Senders einstellen, der in Betrieb ist.
2. Zeilenfang und Bildfang auf richtige Synchronisation einstellen.
3. Strahlstrom der Bildröhre auf Null stellen, indem der Helligkeitsregler auf dem Bedienteil vorn und R 312 auf Minimum gestellt werden.
4. Voltmeter im Bereich 300V Gleichspannung zwischen TPS 1 und Chassis anlegen und mit R 808 (+B adj.) auf 119 ± 1 V einstellen.

B. HORIZONTALABLENKUNG EINSTELLEN

1. Testbild mit eingenschalter AFC empfangen und TPE9 gegen Masse kurzschließen.
2. Mit Zeilenfangregler ein stehendes Bild einstellen und Brucke wieder entfernen.
3. Bildschirmmitte markieren und mittels R 517 Testbild-mitte auf Schirmmitte verschieben (hor. Bildlage).
4. Mit L551 korrekte Bildbreite einstellen (hor. Amplitude).

C. VERTIKALE ABLENKUNG EINSTELLEN

1. Testbild empfangen.
2. Entspr. B (3) mittels Korrektur-Stecker für vertikale Bildlage Testbildmitte auf markierte Schirmmitte einstellen.
3. Mit R 409 (Bildhöhe) korrekte Höne einstellen.

D. FOCUS ADJUSTMENT

1. Receive test pattern.
2. Set contrast and brightness controls to middle position.
3. Adjust focus control to obtain the best focus.

E. WHITE BALANCE ADJUSTMENT (RECEIVING COLOUR BARS)

1. Reduce colour to zero by pressing colour down button on customer control panel.
2. Turn screen VR to minimum and R357, R358 to centre.
3. Set service switch to service position.
4. Connect D.C. voltmeter (300V Range) to TPY1, TPY2 and TPY3, in turn and adjust low light VR's R363, R362, R364 respectively to give a reading of 160V at each of the test points.
5. Turn the screen VR until the screen is just illuminated.
6. Re-adjust low light VR's R363, R362, R364 so that a white line is obtained.
7. Set service switch to normal position and adjust red and green drive VR's (R358, R357) to obtain correct grey-scale tracking.

F. SUB BRIGHTNESS ADJUSTMENT

1. Receive test pattern.
2. Set brightness VR to mid position, contrast and colour to min.
3. Connect ammeter (1mA Range) positive lead to TPE8 negative lead to TPE7.
4. Adjust the sub brightness VR (R316) for a reading of 200μA ± 50μA.
5. Set contrast and brightness to max and check that reading is 960μA minimum, 980μA maximum.

G. SUPPLY VOLTAGE CHECK

1. Set 119V line as described in Section "A".
2. Check following points:

D 552 Cathode	185V ± 10 V
TPE 2	27V ± 2 V
TPE 3	16V ± 1.5 V
TPE 4	16V ± 1.5 V
TPE 5	12V ± 1.0 V

D. FOCUS EINSTELLUNG

1. Farbbalken-Testbild empfangen.
2. Einsteller für Kontrast und Helligkeit auf Mittelwert einstellen.
3. Focusregler auf beste Auflösung einstellen.

E. WEISSBALANCE-EINSTELLUNG GRAUBALANCE

1. Farbbalken-Testbild empfangen und am Bedienteil neg. Farbsättigungsregler-Taste drücken bis keine Farbe vorhanden ist.
2. Einsteller R 365 für "Screen" auf Minimum und R 357 und 358 auf Mittelwert stellen.
3. Auf Service-Stellung des Service-Schalters umschalten.
4. Mit Gleichspannuns-Voltmeter im 300 V-Bereich an den Testpunkten TPY 1, TPY 2 und TPY 3 nacheinander messen und dabei alle Spannungen an den Testpunkten auf 160 V mit den Reglern R 363/362/364 einstellen.
5. Anschließend an diesen Vorabgleich den Einsteller R 365 für "Screen" gerade soviel aus der Minimum-seinstellung herausstellen, daß auf dem Bildschirm ein nur wenig heller, horizontaler Strich sichtbar wird.
6. Mittels geringfügiger Korrekturen an den Graubalance-Reglern R 363/362/364 wird ein neutrales Weiß ohne Änderung der Helligkeit eingestellt.
7. Service-Schalter auf Normal-Stellung bringen und Grautreppe widergeben. Mit den "drive" -Reglern R 358 für Rot und R 357 für Grün – Blau ist nicht veränderbar – wird jetzt eine farbstichfreie Wiedergabe über alle Grauwerte bis hin zum Weiß eingestellt.

F. VOREINSTELLUNG DER HELLIGKEIT

1. Farbbalken-Testbild empfangen.
2. Helligkeits-Vorregler R 312 auf Mittelwert, Farb- und Kontrast-Einstellung auf Minimum einstellen.
3. Den positiven Anschluß eines Millamperemeters im 1mA-Bereich mit TPE 8 und den negativen mit TPE 7 verbinden.
4. Mit dem Helligkeits-Vorregler R 316 den Strahlstrom auf 200 ± 50μA einstellen.
5. Werden jetzt maximale Helligkeit und höchster Kontrast eingestellt, so darf der gemessene Strom nicht niedriger als μA und nicht höher als 980 μA sein.

G. ÜBERPRÜFUNG DER VERSORGUNGSSPANNUNGEN

1. Betriebsspannung +119V gem. Teil A/ 1. -4. einstellen.
2. An nachfolgenden Meßpunkten die Einhaltung der zulässigen Betriebsspannungen überprüfen:

Kathode D 552	185 ± 10 V
TPE 2	27 ± 2 V
TPE 3	16 ± 1,5 V
TPE 4	16 ± 1,5 V
TPE 5	12 ± 1,0 V

H. EHT ADJUSTMENT

1. Set 119V line as described in Section "A".
2. Switch off TV.
3. Connect an EHT Meter to the CRT anode.
4. Switch on TV and reduce contrast brightness and colour to minimum.
5. EHT should not exceed 26.7kV.
6. Turn brightness, colour and contrast to maximum.
7. EHT should not be less than 3kV lower than that measured in 5.

I. COLOUR KILLER ADJUSTMENT

1. Disconnect aerial.
2. Set colour, brightness and contrast to maximum.
3. Adjust R625 until colour noise is present on the screen.
4. Readjust R625 until colour noise just disappears.
5. Replace the aerial and confirm that colour is present.

BENCH SERVICE ADJUSTMENT

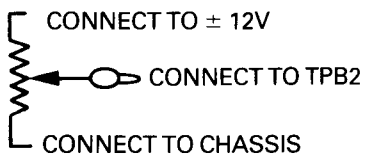
A.F.C. ADJUSTMENT

1. Connect a C.W. oscillator to tuner test point.
2. Connect a high impedance voltmeter to TPB4.
3. Set C.W. oscillator to 38.9 MHz 0.75V p-p.
4. Switch on TV.
5. Adjust L151 until voltmeter indicates 6.0V ± 0.3V.
6. Ensure that voltage falls to 4V or less when C.W. oscillator frequency is increased by 100KHz and rises to 9V or more if C.W. oscillator frequency is reduced by 100 KHz (ie to 38.8 MHz).

CARRIER DEMODULATOR ADJUSTMENT

1. Connect a VIF sweep generator output to TPB3 and shield case.
2. Connect Y input of scope to TPB7 and marker output.
3. Connect AGC bias lead (see below) to TPB2.

AGC BIAS LEAD



H. ÜBERPRÜFUNG DER HOCHSPANNUNG AN DER BILDRÖHRE

1. Betriebsspannung + 119 V gem. Teil A/ 1. -4. einstellen.
2. Gerät ausschalten.
3. Hochspannungs-Tastkopf an Meßgerät und Bildröhren-Anode anschließen.
4. Gerät einschalten und Kontrast, Helligkeit und Farbsättigung auf Minimum einstellen.
5. Unter diesen Betriebsbedingungen darf die Hochspannung 26, 7 KV nicht überschreiten.
6. Helligkeit, Kontrast und Farbsättigung auf Maximum stellen.
7. Die Hochspannung darf sich dadurch um nicht mehr als 3 KV verringern.

I. EINSTELLUNG DES FARBKILLERS

1. Antenne vom Anschluß abziehen.
2. Farbsättigung, Helligkeit und Kontrast auf Maximum stellen.
3. R 625 so einstellen, daß das Rauschsignal auf dem Bildschirm farbig wiedergegeben wird.
4. R 625 genau soweit zurückdrehen bis die farbe im Rauschen wieder verschwindet.
5. Antenne wieder anschließben, ein Senderprogramm in Farbe empfangen und prüfen, ob farbe wiedergegeben wird.

WERKSTATT - EINSTELLARBEITEN

EINSTELLUNG DER NACHSTIMMAUTOMATIK (AFC)

1. Unmodulierten Abgleichsender mit sinusförmigem Signal an Tuner-Meßpunkt anschließen.
2. An Meßpunkt TPB 4 ein Voltmeter mit hochomiger Eingangsimpedanz anschließen.
3. Ableichsender auf 38.9 MHz und 0,75 $V_{s\text{-}s}$ Ausgangsspannung einstellen.
4. Fernseher einschalten.
5. L 151 so einstellen, daß das Voltmeter 6,0 6 0.3 V anzeigt.
6. Überprüfen, ob die Spannung auf 4.0 V absinkt, wenn die Abgleich-senderfrequenz um 100 KHz (39.0 MHz) erhöht wird, und auf 9.0 V ansteigt, wenn die Frequenz um 100 KHz (38.8 MHz) verringert wird.

ABGLEICH DES BILDDEMODULATORS

1. Einen Bild – ZF – Wobbler an TPB 3 und masseseitig das Abschirmblech anschließen.
2. Vertikalablenkungs-Eingänge (Y) eines Oszillografen mit TPB 7 und mit dem Markengeber-Ausgang verbinden und Zeitbasis vom Wobbler extern triggern.
3. Entsprechend nebenstehender Abbildung einen einstellbarren Spannungsteiler herstellen und die abgegriffene Teilerspannung für die automatische Verstärkungsregelung (AGC) auf TPB 2 geben.

4. Detune L151 fully clockwise.
5. Set AGC bias to obtain a waveform of 1V p-p.
6. Adjust L104 so that the changing waveform has its peak at the 38.9 MHz marker position (see Fig. 10).
7. Adjust L151 so that ripple waveform has its peak at 38.9 MHz.

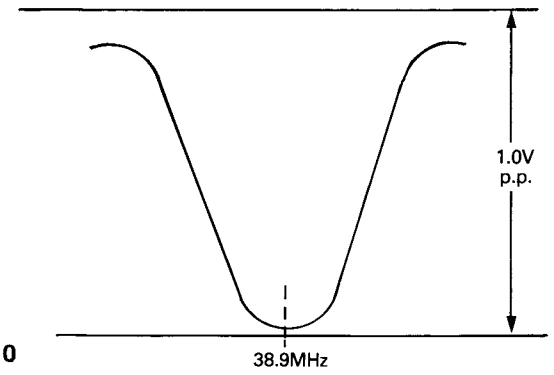


Fig 10

4. L 151 durch Drehen des Kernes im Uhrzeigersinne vollstandig verstimmen.
5. Die Teilerspannung für TPB 2 so einstellen, daß die auf dem Oszillografenschirm abgebildete Durchlaßkurve eine maximale Höhe von 1,0 $V_{s\text{-}s}$ erhält.
6. L 104 so abgleichen, daß bei der Marke des Markengebers für 38,9 MHz der Kurvenverlauf ein Maximum erhält (entspr. Abb. 10).
7. Wird L 151 jetzt wieder zurückgedreht auf die richtige Abgleichposition, so erhält die wellige Kurve bei 38,9 MHz eine Spitze.
   Benutzte Hilfsverbindungen wieder abklemmen.

SIF ADJUSTMENT

1. Connect S.I.F. generator (5.5MHz) to TPB10.
2. Connect the oscilloscope to TPB8.
3. Adjust L201 so that the waveform has maximum amplitude and is as shown in Fig. 11.

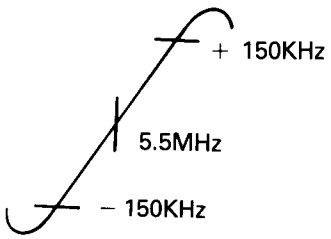


Fig 11

EINSTELLUNG DER TON-ZF

1. Ton-ZF-Generator mit 5,5 MHz an TPB 10 anschließen.
2. Oszillografen an TPB 8 anklemmen.
3. Ableichkern von L201 solange verdrehen, bis die größte Amplitude erreicht wird und die Kurvenform der in Abb. 11 gezeigten entspricht.

SIF TRAP ADJUSTMENT

1. Connect.
2. Connect the Y input of the oscilloscope and 6.0MHz marker output to TPB23.
3. Adjust L106 until the waveform in fig. 12 has a minimum at 5.5 MHz.

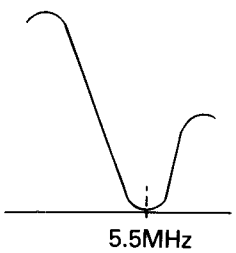


Fig 12

EINSTELLUNG DER TON-ZF-FALLE

1. Ton-ZF-Wobbler mit Markengeber für 5,5 MHz an TPB 7 anschließen.
2. Vertikalablenkungs-Eingänge (Y) eines Oszillografen mit TPB 23 und dem Ausgang des 5,5 MHz-Markengebers verbinden und Zeitbasis extern vom Wobbler triggern.
3. Mit L 106 an der 5,5 MHz-Marke ein Minimum des Kurvenverlaufs einstellen.

CHROMINANCE BANDPASS ADJUSTMENT

1. Connect sweep generator of 4.43 MHz centre frequency and a sweep of ± 1.5MHz minimum and markers of 3.68MHz, 4.43MHz and 6.0MHz to TPB23.
2. Connect the oscilloscope Y input to TPB14.
3. Adjust T601 to give the waveform shown below (Fig 13)

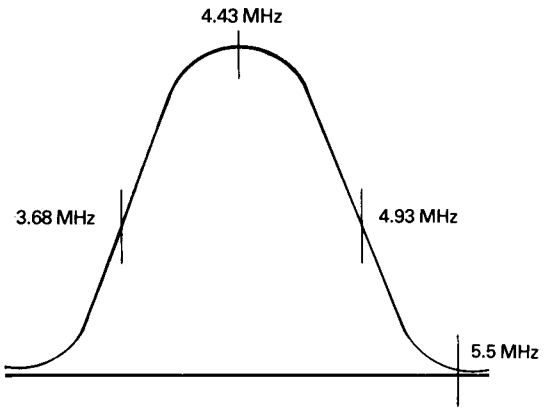


Fig 13

Frequency	Level (%)
3.68MHz	60 ± 20
4.43MHz	90 ~ 100
4.93MHz	60 ± 20
5.5MHz	0

EINSTELLUNG DER DURCHLASSKURVE DES FARBVERSTÄRKERS

1. Farbkanal-Wobblersender mit mindestens ± 1,2 MHz Hub und 4,433619 MHz Mittenfrequenz sowie Marken bei 3,68 MHz, 4,43 MHz, 4,93 MHz und 5,5 MHz an TPB 23 anschließen.
2. Vertikalablenkungs-Eingang (Y) eines Oszillografen mit TPB 14 verbinden und Zeitbasis extern vom Wobbler triggern.
   T 601 so einstellen, daß die Kurvenform entspr, Abb. 13 und der Tabelle erreicht wird. Danach Anschlüsse entfernen.

COLOUR SYNCRONIZATION

1. Receive philips test pattern.
2. Connect a 10 μF capacitor between TPB19 and chassis.
3. Connect a 100 KΩ resistor between TPB18 and chassis.
4. Connect an oscilloscope to TPB21.
5. Set R627 to centre and adjust R631 until waveform becomes stationary.
6. Remove the 10μ F capacitor and 100KΩ resistor.

ABGLEICH DER FARBSYNCHRONISATION

1. Sender-Testbild mit Farbbalken empfangen.
2. TPB 19 und Masse mit BP-Kondensator 10 μF miteinander verbinden.
3. TPB 18 und Masse mittels 100 KΩ -Widerstand miteinander verbinden.
4. Oszillografen an TPB 21 anschließen und triggern.
5. R 267 auf Mittelstellung bringen und R 631 so einstellen, daß die abgebildete Kurve zum Stehen kommt.

DELAY LINE ADJUSTMENT

1. Receive test pattern.
2. Connect a capacitive jumper 10μF/16V across C301 and chassis to ground the video signal.
3. Connect the oscilloscope probe to TPB21.
4. Adjust R627 to remove line paring on magenta colour bar.
5. Adjust L602 and L603 so that each line displayed on the oscilloscope is the same shape and size (see Fig. 14) and colours on screen are correct.

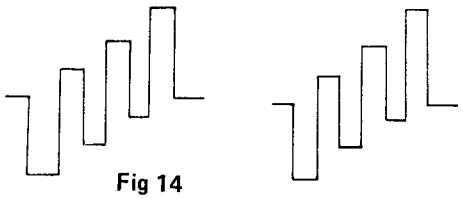


Fig 14

SUB COLOUR ADJUSTMENT

1. Receive philips test pattern.
2. Set the contrast to maximum, the brightness to minimum and the picture control to click position.
3. Connect an oscilloscope to TPB21.
4. Connect a 10μF capacitor between TPB25 and chassis.
5. Adjust R613 to give the waveform shown in Fig 15.

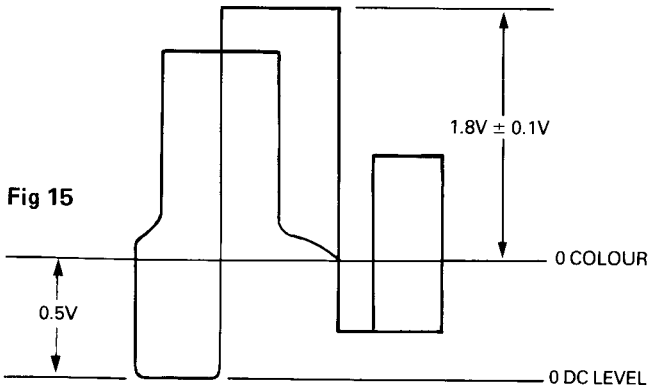


Fig 15

SUB CONTRAST

1. Receive philips test pattern.
2. Set the brightness and colour to minimum, contrast to maximum and the picture control to the "click" position.
3. Connect an ascilloscope probe to TPB21.
4. Adjust R319 to obtain the waveform shown in Fig. 16.

ABGLEICH DER PAL-VERZÖGERUNGSLEITUNG

1. Farbbalken-Testbild empfangen.
2. C 301 gegen Masse mit BP-Kondensator 10μ/16V uberbrucken, so daß das Farbsignal gegen Masse kurzgeschlossen wird.
3. Tastkopf des Oszillografen an TPB 21 anklemmen.
4. Mittels R 627 Zeilenpaarigkeit im Magenta-Farbbalken beseitigen.
5. Mit L 602 und L 603 gem. Abb. 14 die Farbinformation jeder Zeile in Form und Grße gleich einstellen; überprüfen, ob die Farben auf dem Bildschirm richtig wiedergegeben werden.

VOREINSTELLUNG DER FARBSÄTTIGUNG

1. Sendertestbild mit Farbbalken empfangen.
2. Kontrast auf Minimum stellen. Bildschärferegler "picture" auf gerastete Mittelstellung bringen. Helligkeit auf Minimum stellen.
3. Oszillografen an TPB 21 anklemmen.
4. Elektrolytkondensator (10μ/16V) mit positivem Anschluß an TPB25 und negativem auf Chassis legen.
5. Mit R 613 auf die in Abb. 15 gezeigten Werte abgleichen.

VOREINSTELLUNG DES KONTRASTES

1. Testbild mit 100% Luminanzmodulation empfangen.
2. Helligkeit und Farbe auf Minimum, Kontrast auf Maximum stellen und Bildschärferegler in Raststellung bringen.
3. Oszillografen an TPB 21 anklemmen.
4. Mit R 319 auf die in Abb. 16 angegebenen Werte einstellen.

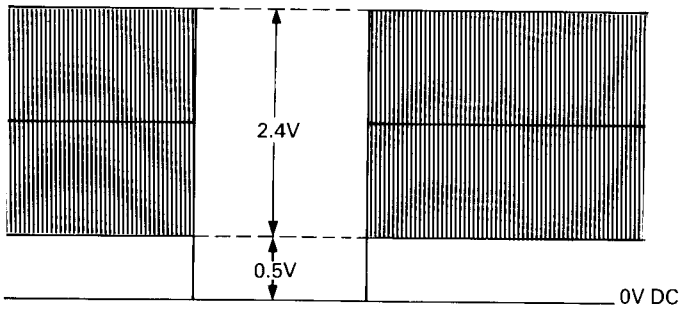
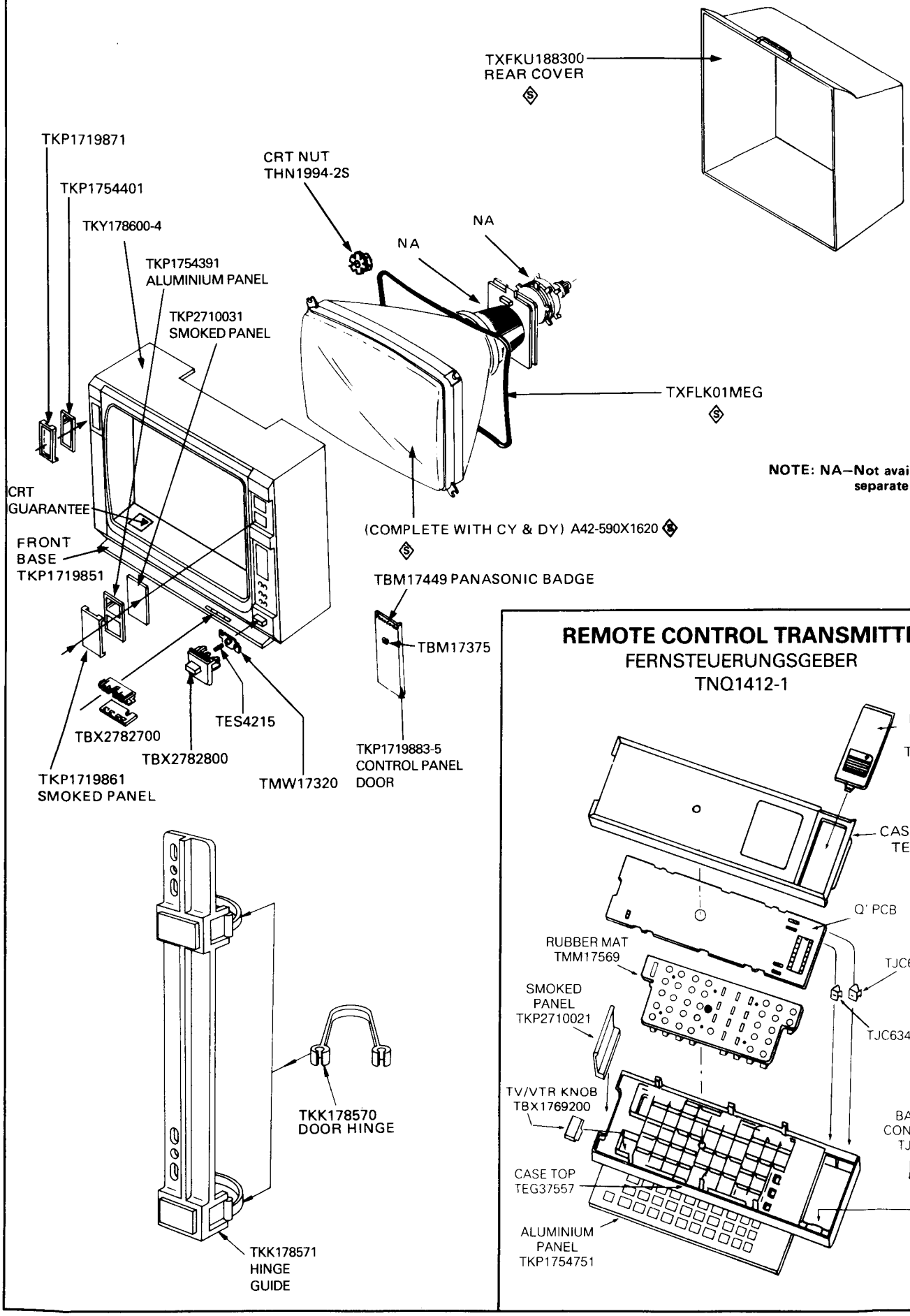


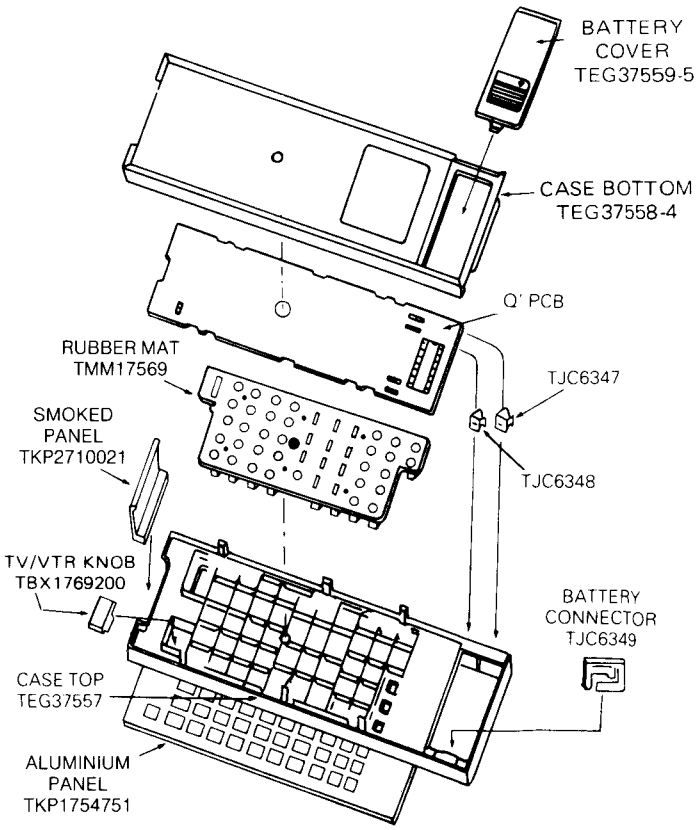
Fig 16

EXPLODED VIEWS
EXPLOSIONS-ZEICHNUNGEN

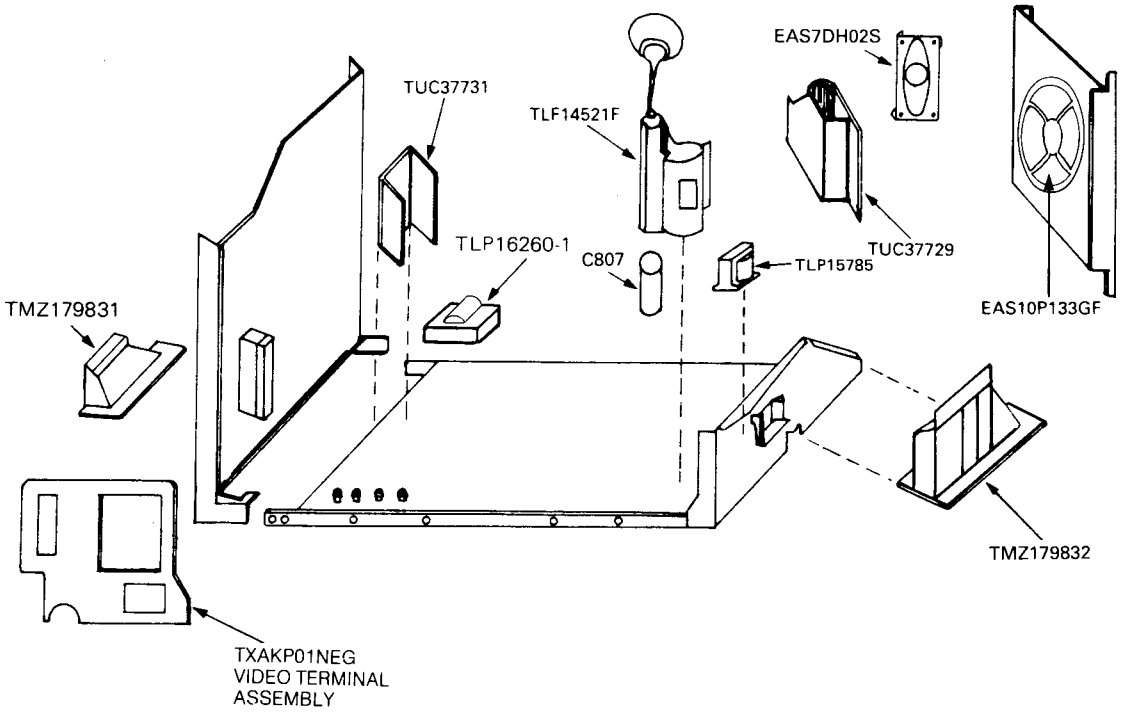
CABINET PARTS
GEHÄUSE - TEILE



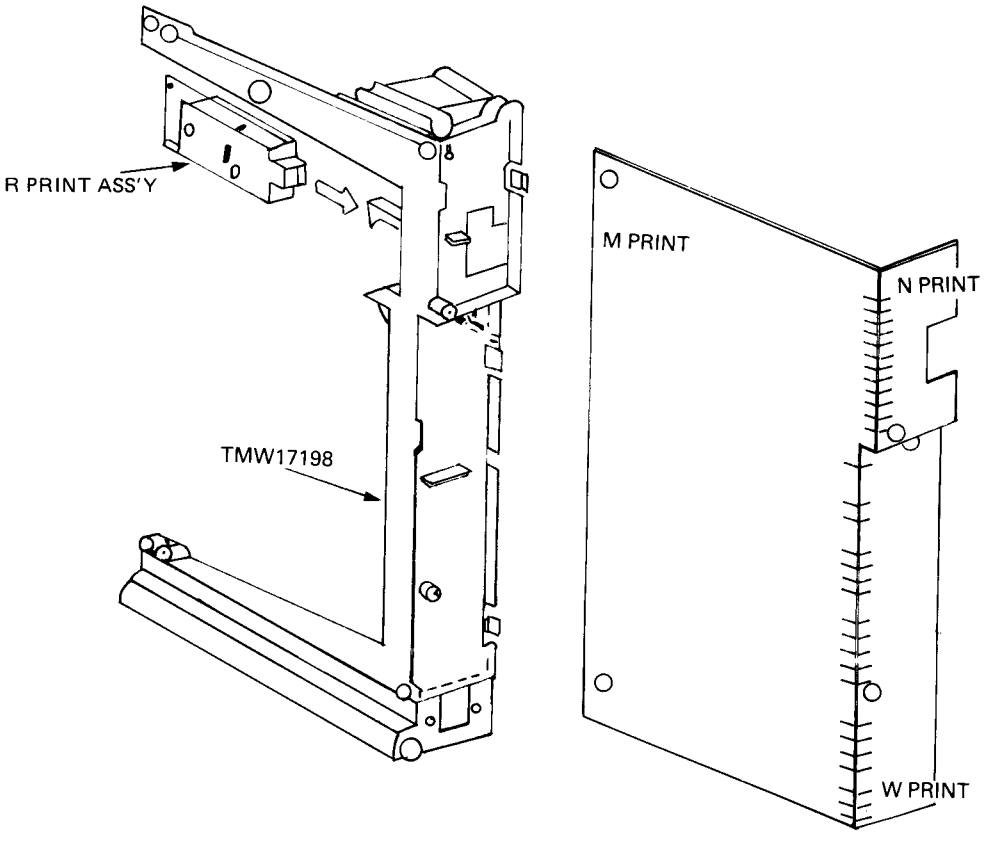
REMOTE CONTROL TRANSMITTER
FERNSTEUERUNGSGEBER
TNQ1412-1



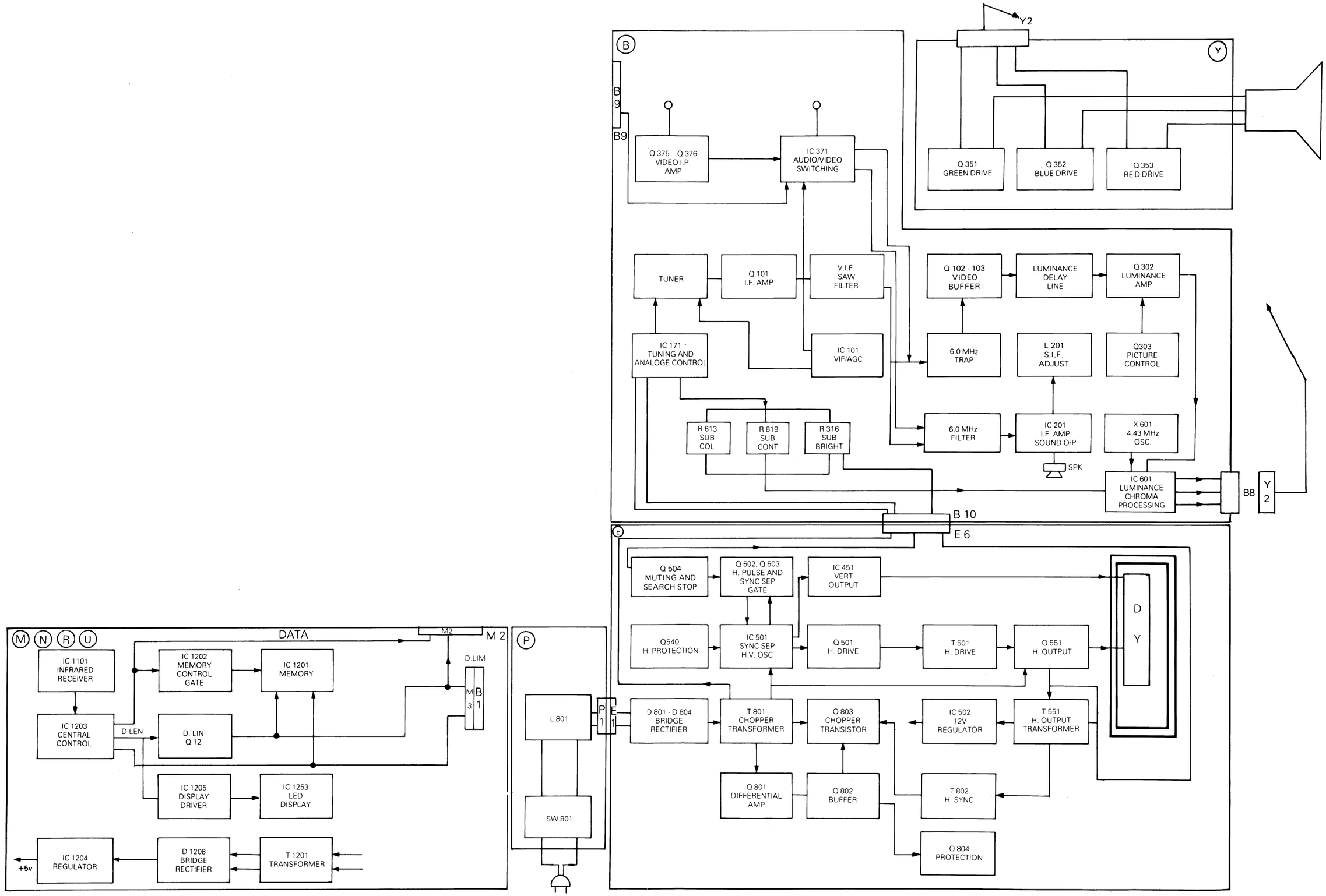
MAIN CHASSIS PARTS
TEILE DES HAUPTCHASSIS

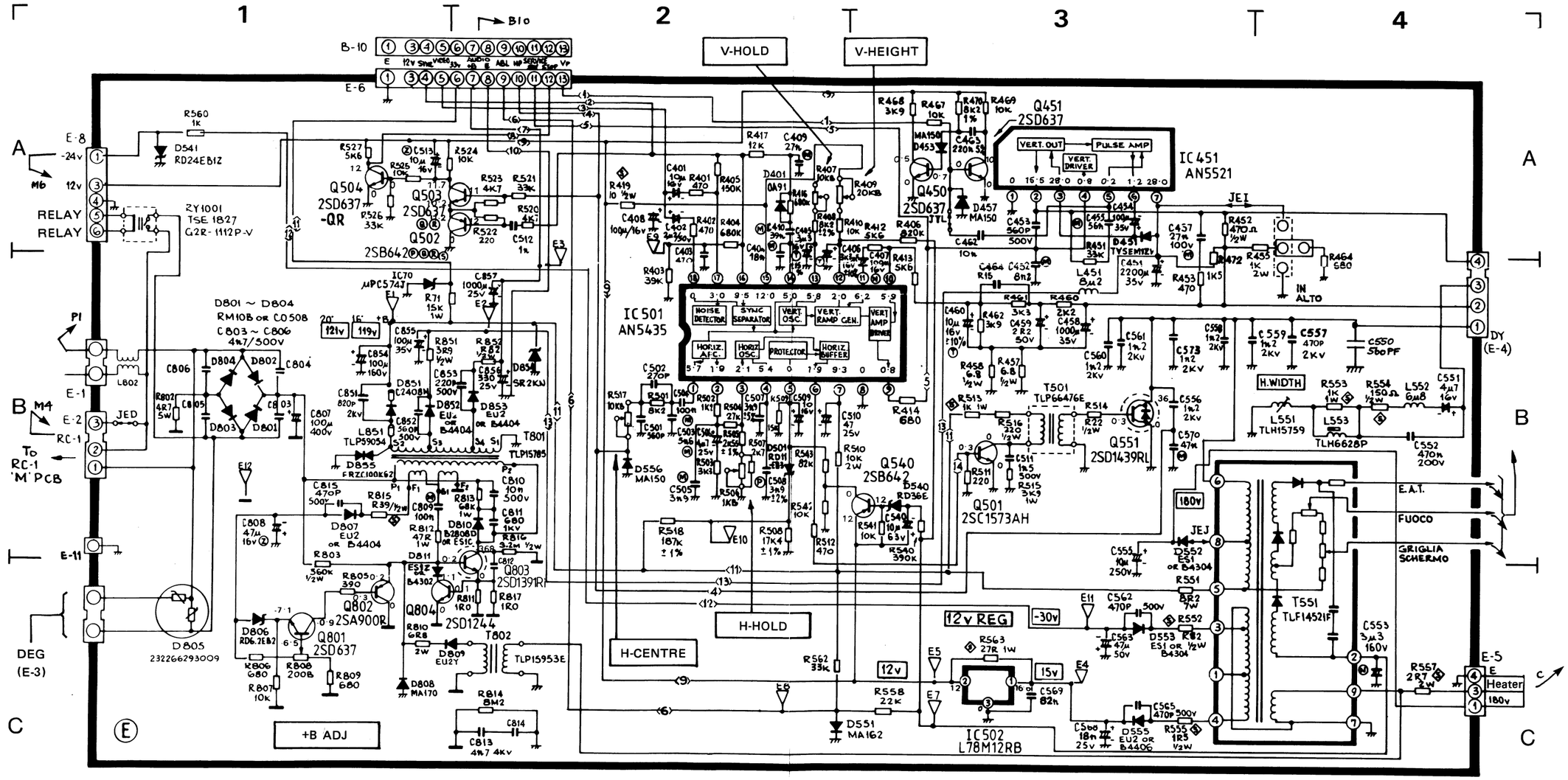


CONTROL BLOCK PARTS
BEDIENTEIL - BAVELEMENTE



LEITERPLATTEN IM BLOCKSCHALTBILD
BLOCK DIAGRAM




1
2
3
4
B10
B-10
E-6
V-HOLD
V-HEIGHT
IC451
AN5521
VERT. OUT
PULSE AMP
VERT. DRIVER
Q451
2SD637
Q450
2SD637
Q504
2SD637
-QR
Q503
2SD637
Q502
2SB642
IC501
AN5435
NOISE DETECTOR
SYNC SEPARATOR
VERT. OSC.
VERT. RAMP GEN.
VERT AMP DRIVER
HORIZ. AFC.
HORIZ. OSC.
PROTECTOR
HORIZ. BUFFER
IC70
μPC574J
D801 ~ D804
RM10B or C0508
C803 ~ C806
4n7/500V
Q540
2SB642
Q551
2SD1439RL
Q501
2SC1573AH
T501
TLP664G6E
T801
TLP15785
T802
TLP15953E
Q801
2SD637
Q802
2SA900R
Q803
2SD1391RF
Q804
2SD1244
D805
232266293009
D806
RD6.2EB2
D807
EU2
or B4404
D808
MA170
D809
EU2Y
D810
B2808D
or ES1C
D811
ES1Z
or B4302
D851
C2408M
D852
EU4
or B4404
D853
EU2
or B4404
D854
SR2KN
D855
FRZC100K62
D401
0A91
D451
TYSEMI1V
D453
MA150
D457
MA150
D501
RD11EB3
D540
RD36E
D551
MA162
D552
ES1
or B4304
D553
ES1 or ½W
B4304
D555
EU2 or
B4406
D556
MA150
IC502
L78M12RB
L451
8m2
L501
TLP59054
L551
TLH15759
L553
TLH6628P
RY1001
TSE 1827
G2R-1112P-V
RELAY
RELAY
E-8
-24v
12v
M6
PI
E-1
E-2
JED
RC-1
To
RC-1
'M' PCB
E-11
DEG
(E-3)
B
M4
L802
C806
C804
C805
C803
C807
100μ
400v
R802
4R7
5W
D804
D802
D803
D801
EI2
C815
470P
500v
R815
R39 ½W
C808
47μ
16v
R803
360K
½W
R805
390
R806
680
R807
10K
R808
200B
R809
680
R810
6R8
2W
R811
1R0
R812
47R
1W
R813
6R8
1W
R817
1R0
C809
100n
C810
10n
500v
C811
680
1KV
C812
1n
C813
4μ7 4KV
C814
B42
C851
820P
2kv
C852
360P
3000v
C853
220P
500V
C854
100μ
160v
C855
100μ
35v
C856
330
25v
C857
1000μ
25v
R851
3R9
½W
R852
2R2
½W
R853
2R2
½W
R854
2R2
½W
R71
15k
1W
121v
119v
+B
20
16
E2
E3
E9
E10
E5
E6
E7
E4
E11
E12
E-4
E-5
DY
E
Heater
180v
C
H-HOLD
H-CENTRE
+B ADJ
12v REG
-30v
12v
15v
H.WIDTH
IN ALTO
JEJ
E.A.T.
FUOCO
GRIGLIA SCHERMO
R560
1K
R527
5K6
R525
10K
R526
33K
R524
10K
R523
4K7
R521
33K
R520
4K
R522
220
R512
470
R517
10K8
R518
187K
± 1%
R508
17K4
± 1%
R543
82K
R542
10K
R541
10K
R540
10K
2W
R419
10
½W
R417
12K
R409
20K8
R407
10K8
R408
8K2
± 2%
R410
10K
R412
5K6
R413
5K6
R414
680
R406
820K
R405
150K
R404
680K
R403
39K
R402
470
R401
470
R468
3K9
R467
10K
R470
8K2
1%
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R455
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R459
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R458
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R457
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R551
8R2
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R552
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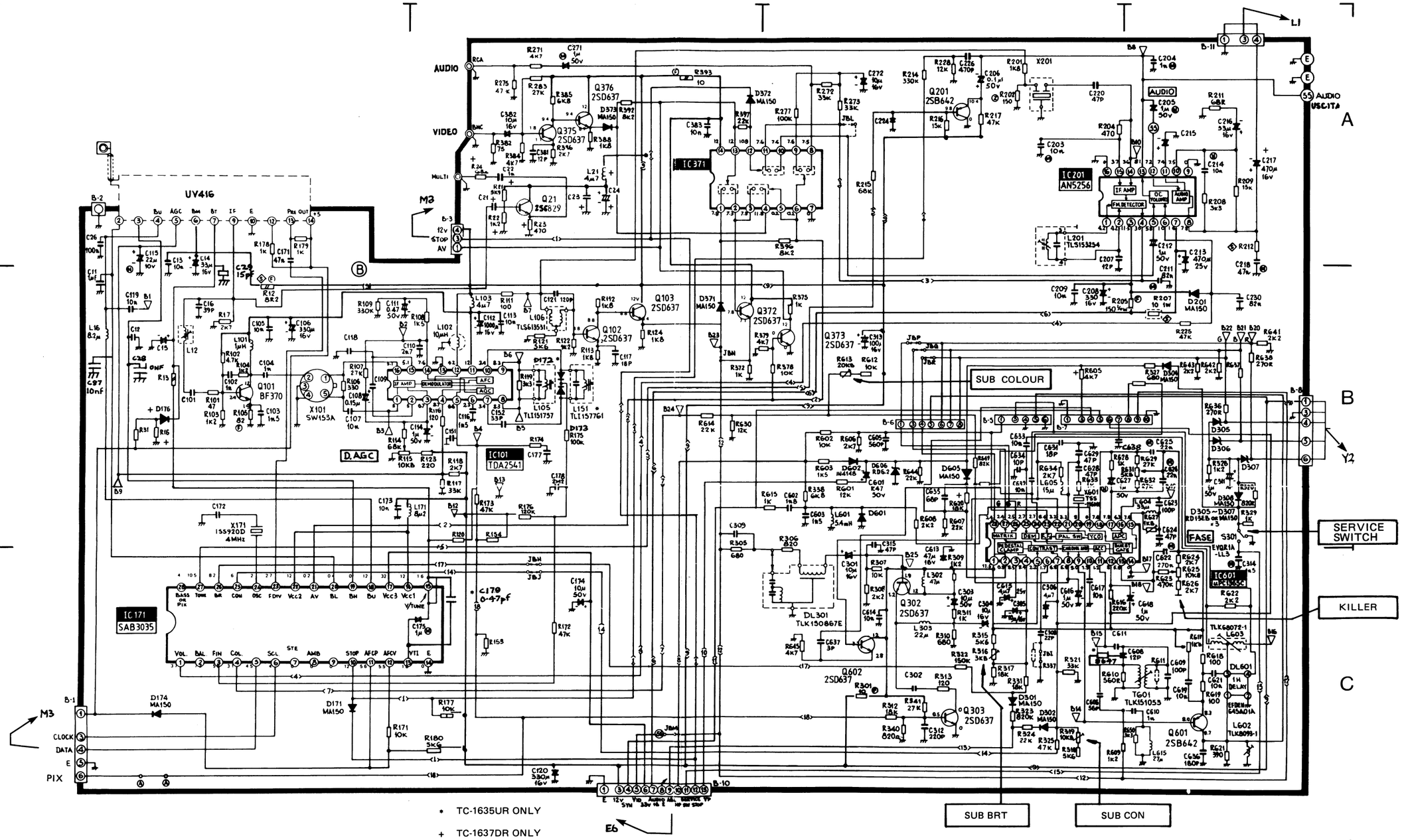
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SUB BRT
SUB CON
SERVICE SWITCH
KILLER
FASE
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MA150
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D308
MA150
D605
MA150
D606
RD6.2
D602
IN4148
D601
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AUDIO OUT/CITA
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12V
Vtn
33V
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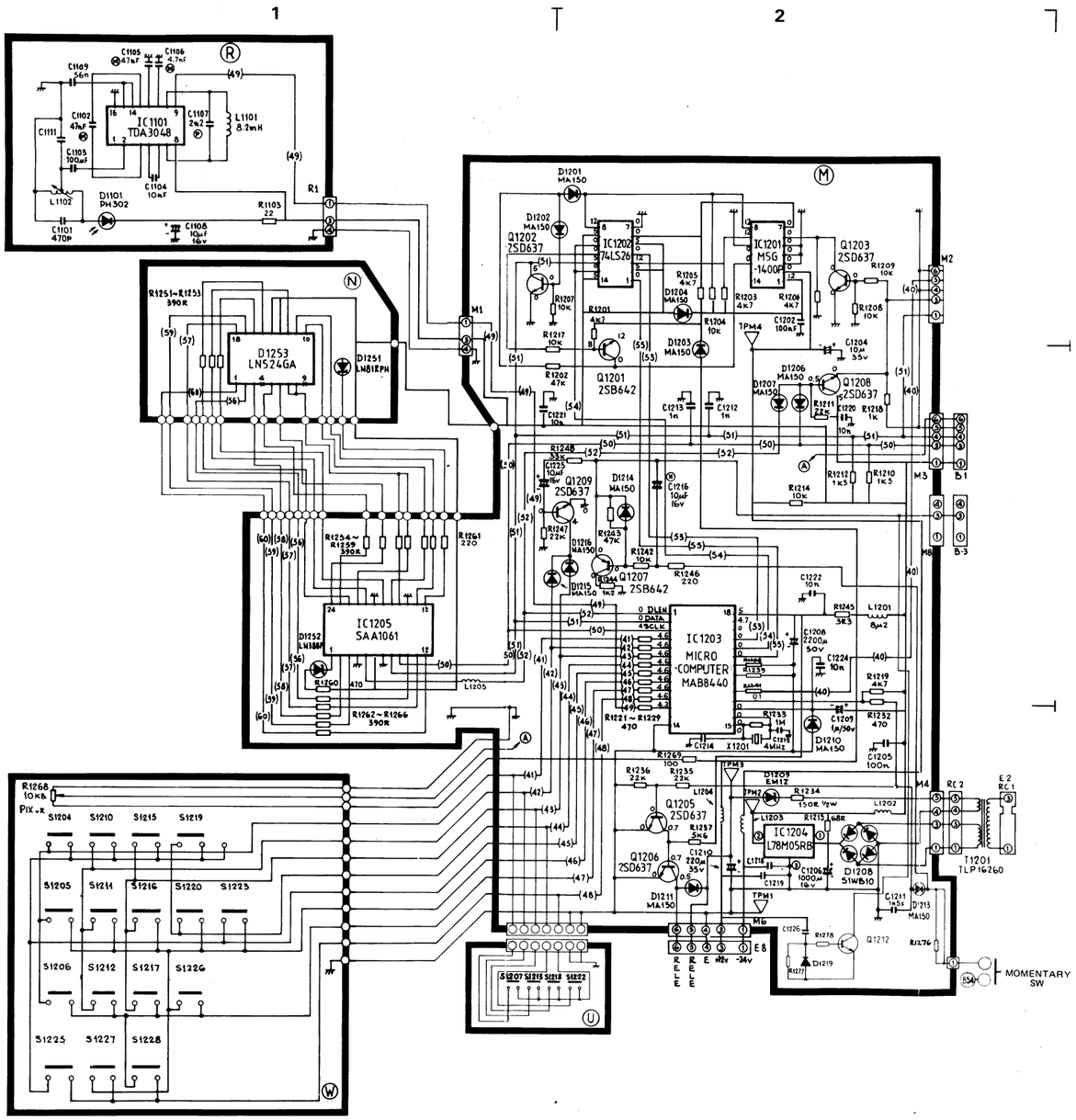
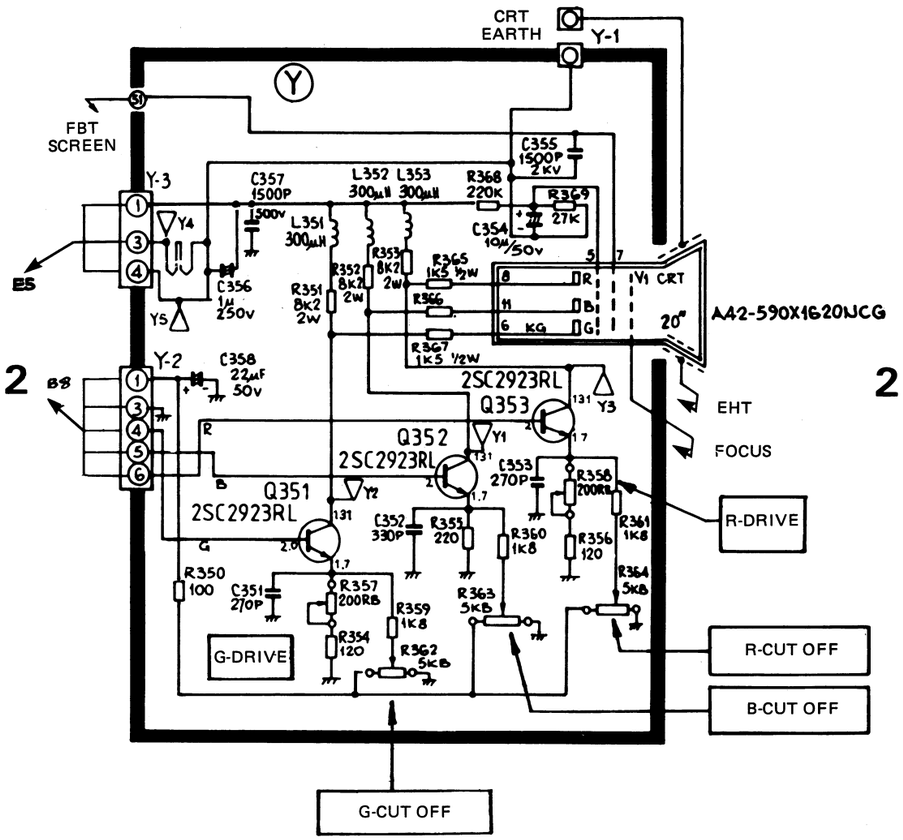
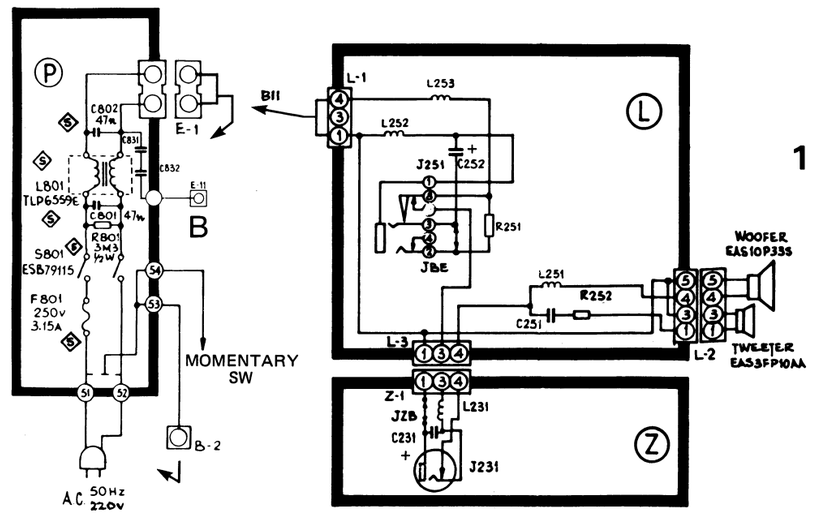
SERVICE
12V
STOP
* TC-1635UR ONLY
+ TC-1637DR ONLY

"R", "N", "M", "U", "W" SCHEMATIC



"P", "Y", "L" SCHEMATIC





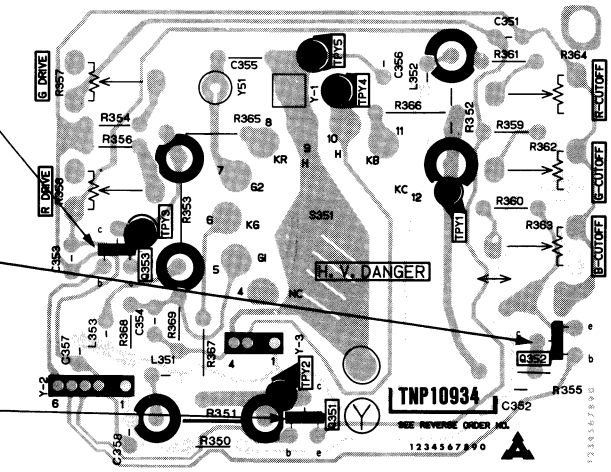
P.C.B. VIEWS ABBILDUNG DER LEITERPLATTEN

"Y" P.C.B. TNP 10934
LEITERPLATTEN „Y"

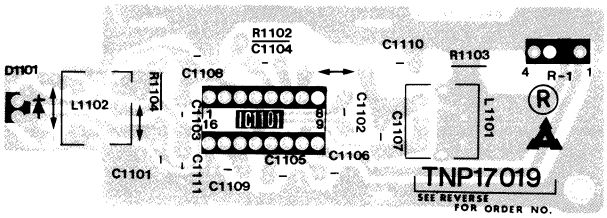
Q351	
E	1.7
B	2.0
C	131

Q352	
E	1.7
B	2
C	131

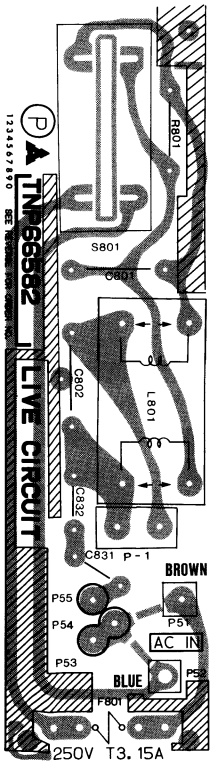
Q351	
E	1.7
B	2
C	131



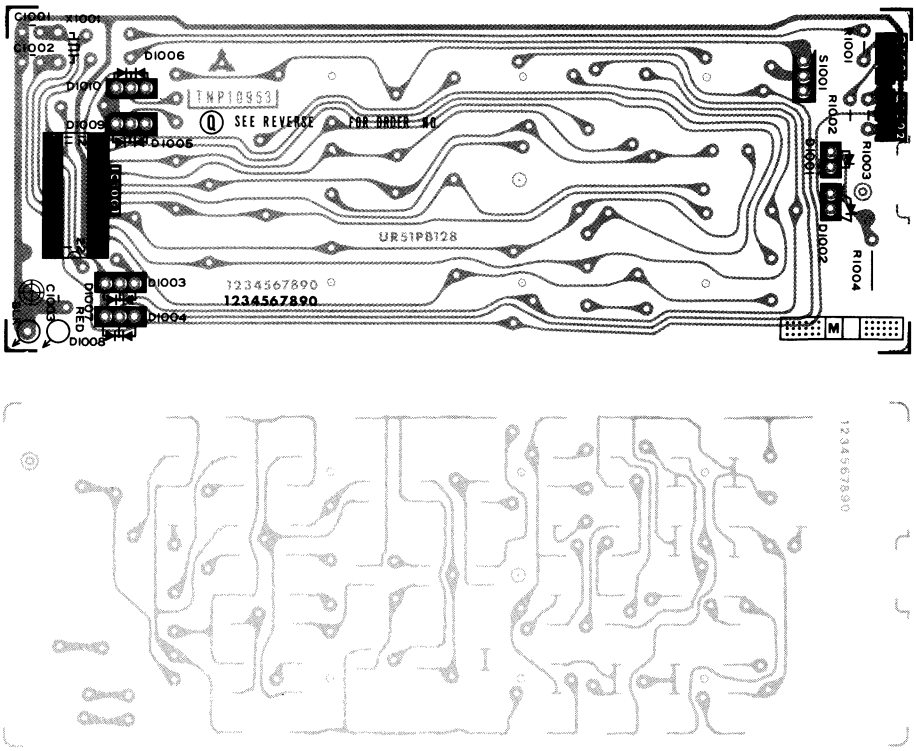
"R" P.C.B. TNP 17019
LEITERPLATTEN „R"



"P" P.C.B. TNP 66582BZ
LEITERPLATTEN „P"



"Q" P.C.B. TNP 10953
LEITERPLATTEN „Q"



"E" P.C.B. TNP 62898AA
LEITERPLATTEN „E"

Q450	
E	0
B	0.7
C	0.5

Q451	
E	0
B	0
C	10

Q502	
E	10.2
B	12
C	30

Q504	
E	12
B	11.4
C	12

Q503	
E	10.2
B	0.1
C	–0.3

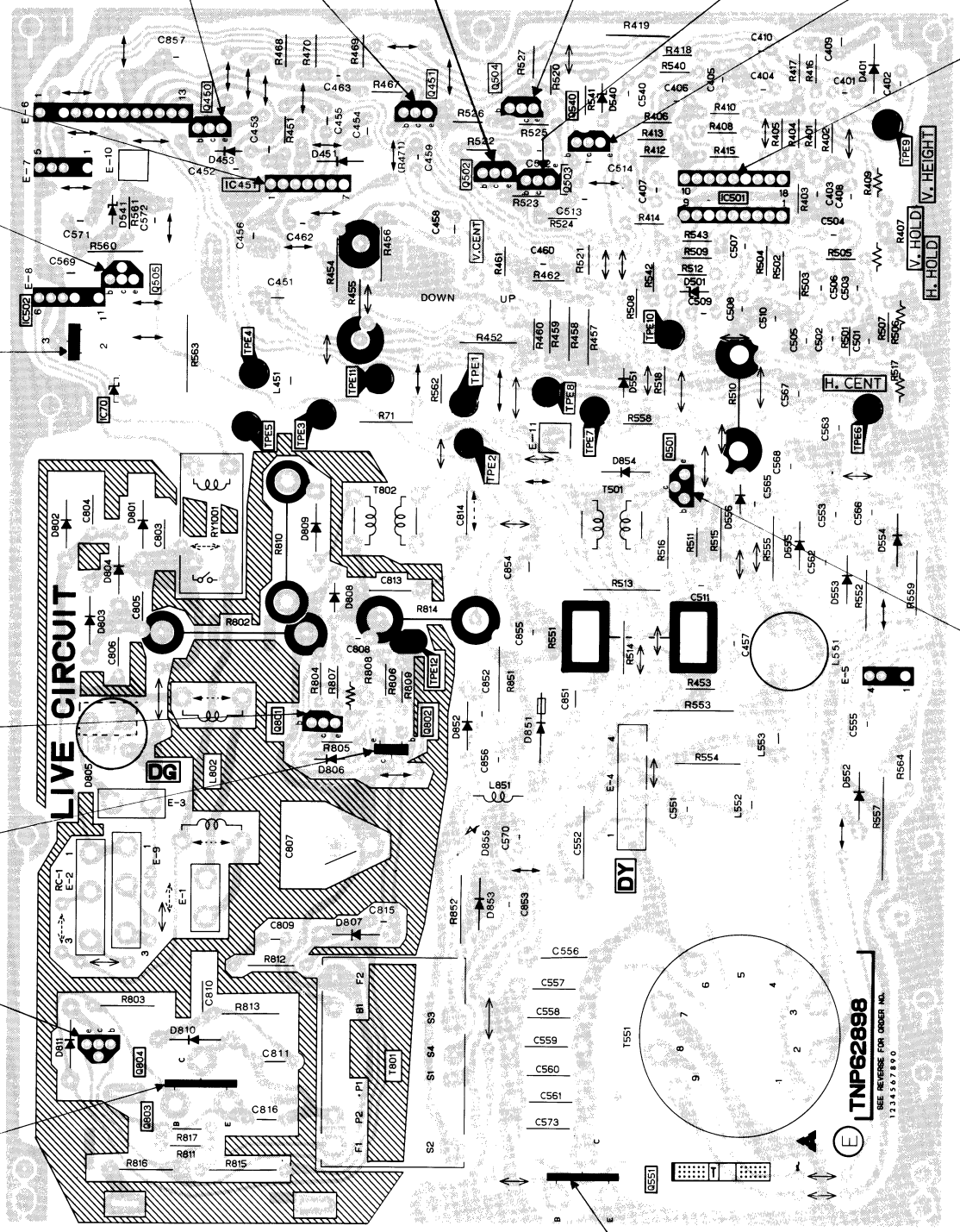
Q540	
E	12
B	12
C	0

IC451	
1	0
2	15.5
3	28.0
4	0.8
5	0.2
6	1.2
7	28.0

IC501	
1	5.7
2	1.9
3	2.1
4	5.4
5	0
6	1.9
7	9.3
8	0
9	0.8
10	5.9
11	6.2
12	2.0
13	5.8
14	5.0
15	12.0
16	9.5
17	3.0
18	0

Q505	
E	–24
B	–25
C	–30

IC502	
1	16.5
2	12
3	0



Q501	
E	0
B	0.3
C	0.1

Q801	
E	–7.1
B	–6.5
C	–0.9

Q802	
E	0.2
B	–0.3
C	0

Q804	
E	0
B	0.1
C	1.1

Q803	
E	0.1
B	0.2
C	368

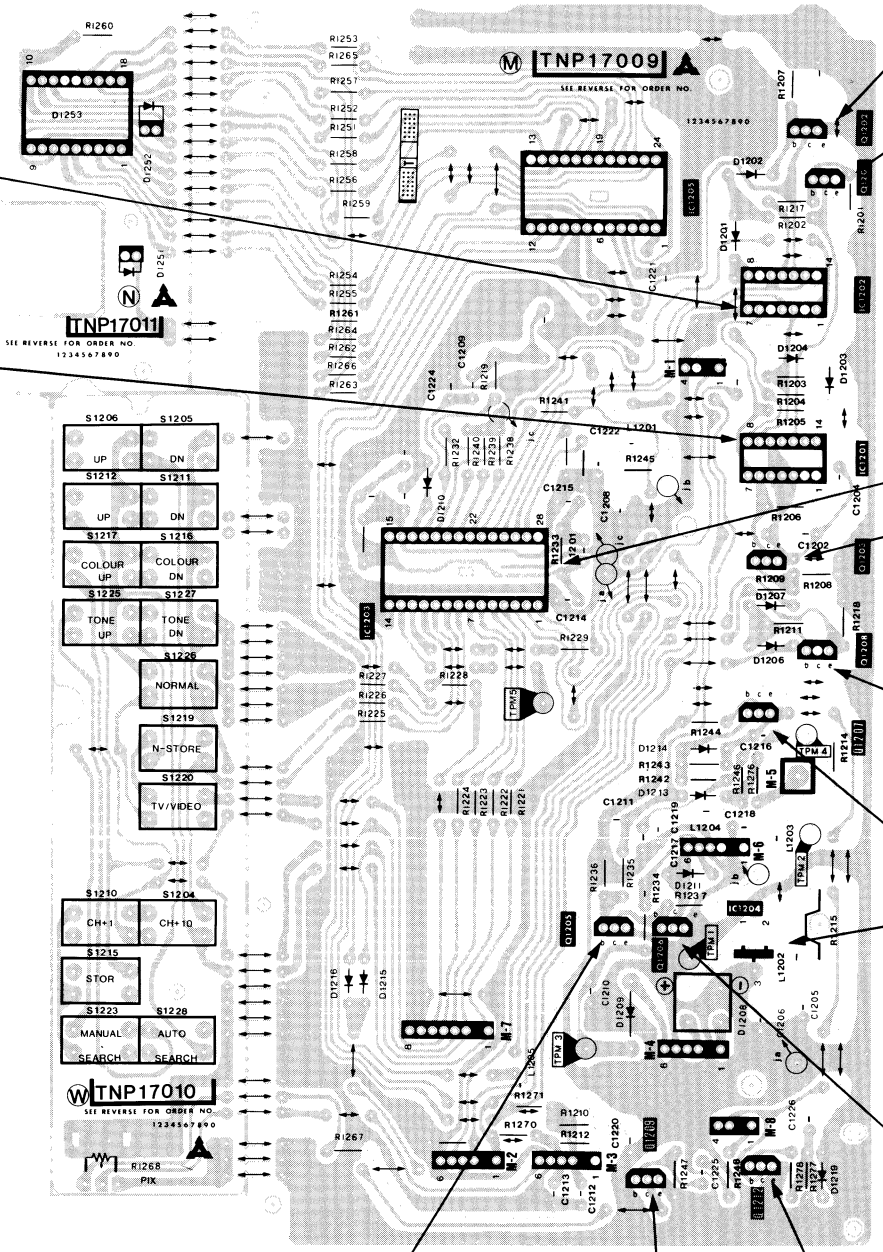
Q551	
E	0
B	0.3
C	–36

"N" P.C.B.TNP 17011

"M" P.C.B. TNP 17009AB

IC1202	
1	0
2	5
3	0
4	0
5	5
6	12
7	12
8	14
9	5
10	0
11	0
12	5
13	0
14	5

IC1201	
1	12
2	0
3	0
4	0
5	0
6	0
7	0
8	12
9	12
10	0
11	0
12	8.3
13	0
14	2.7



Q1202	
E	0
B	0
C	5

Q1201	
E	12
B	0.3
C	12

IC1203	
1	0.2
2	0.2
3	4
4	4.6
5	4.6
6	4.6
7	4.6
8	4.6
9	4.6
10	0.2
11	4.6
12	5
13	4.3
14	0
15	0
16	0
17	0
18	0.1
19	0.1
20	5
21	4.7
22	4.7
23	0
24	0
25	0
26	0
27	4.7
28	4.7

Q1203	
E	0
B	0
C	11.3

Q1208	
E	0
B	0.6
C	5

Q1207	
E	3.3
B	4
C	0

IC1204	
1	12
2	5
3	0

Q1206	
E	0
B	0.5
C	0.7

Q1205	
E	0
B	0
C	0.7

Q1209	
E	0
B	0
C	4

Q1212	
E	0
B	0
C	0

IMPORTANT

PLEASE NOTE: After replacing IC1203, the normalised button 'N' on the control panel must be pressed to ensure correct function of the IC.

"B" P.C.B. TNP 45141
LEITERPLATTEN „B"

IC	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
601	11.5	0.8	8.5	8.4	2.2	1.7	6.8	5.8	9.0	1.9	1.2	8	5.8	0	7.6	4.3	7.8	7.6	0	9	3.2	3.2	0.4	2.7	2.7	2.5	2.4	2.4

Q602	
E	1.8
C	12
B	2.4

Q601	
E	8.3
B	9.0
C	9.7

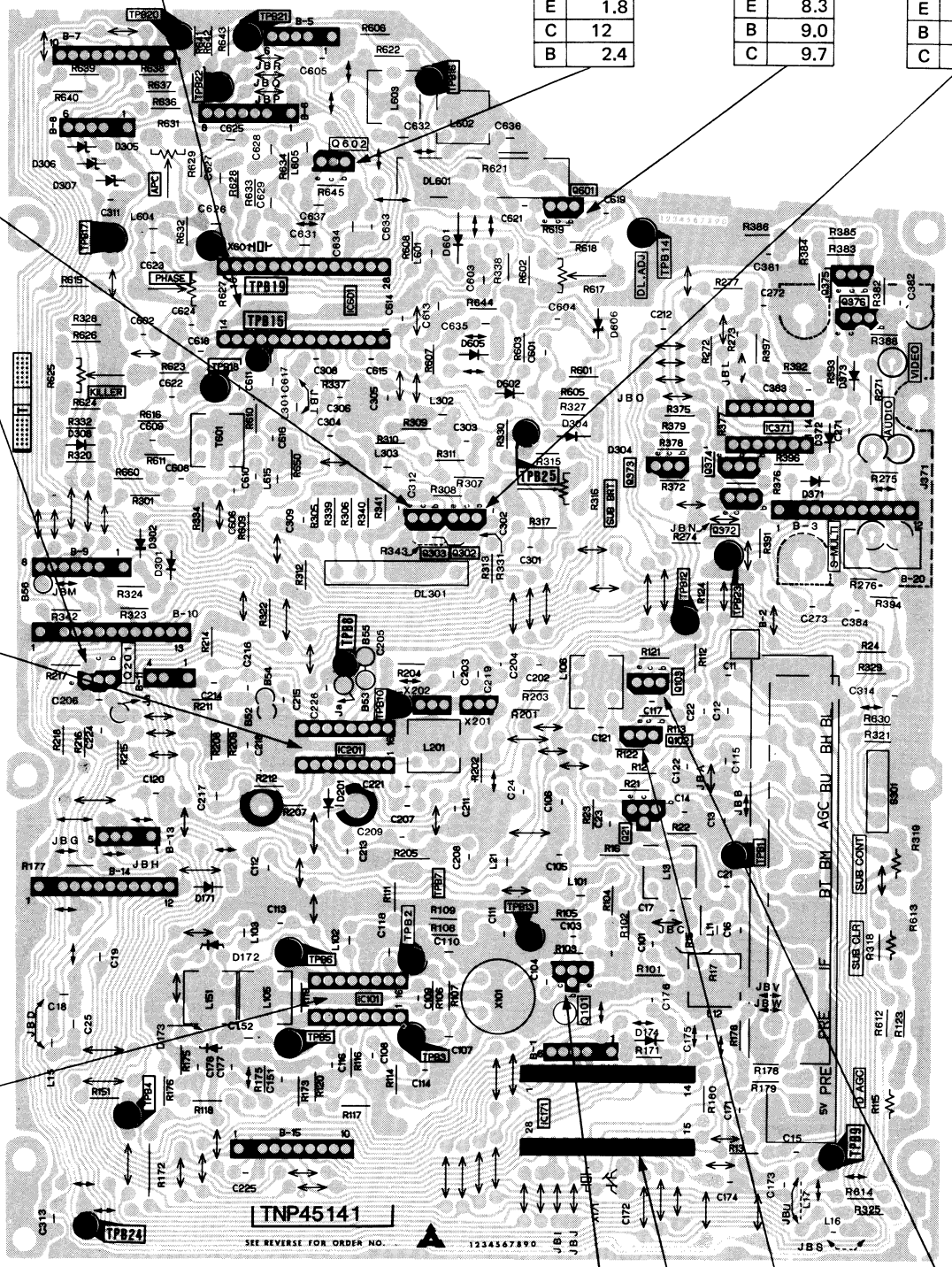
Q302	
E	1.2
B	1.9
C	12

Q303	
E	0
B	0.5
C	0

Q201	
E	10.4
B	9.8
C	0

IC201	
1	4.2
2	4.2
3	11.5
4	3.0
5	5.8
6	1.0
7	16
8	7.8
9	0
10	7.5
11	7.4
12	7.2
13	8.1
14	3.6
15	3.7
16	0

IC101	
1	5
2	5
3	0.7
4	8.7
5	6.6*
6	2.3
7	3.4
8	8.3
9	8.3
10	3.4
11	12
12	4.2
13	0
14	7.6
15	5.1
16	5.1



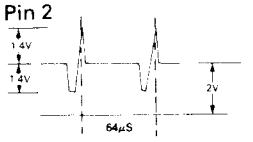
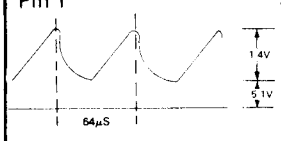
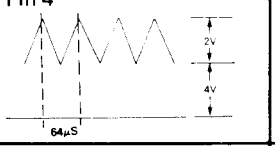
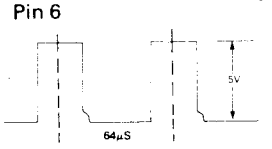
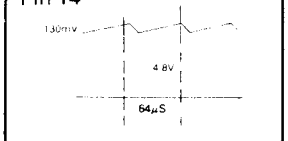
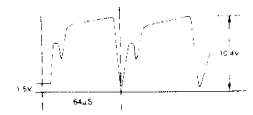
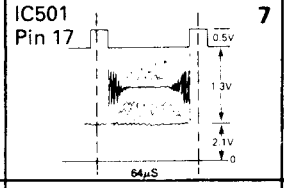
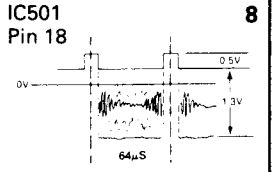
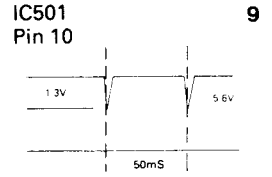
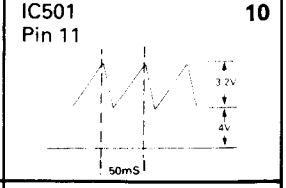
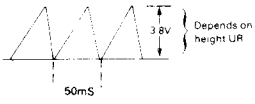
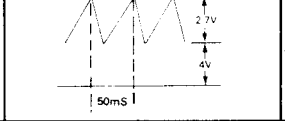
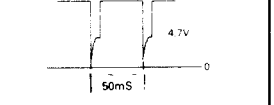
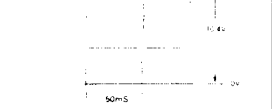
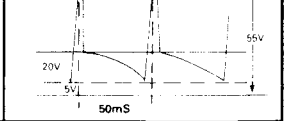
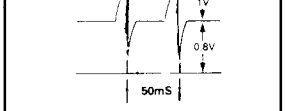
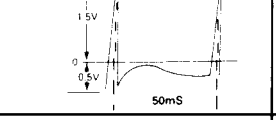
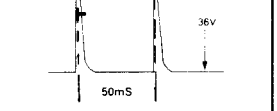
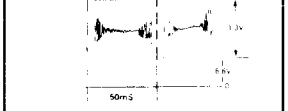
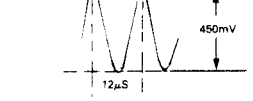
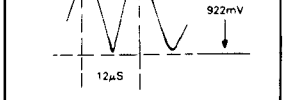
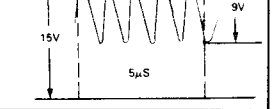
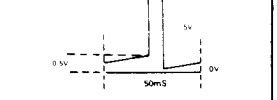
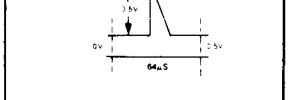
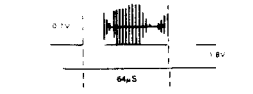
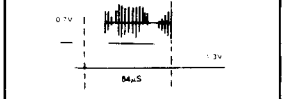
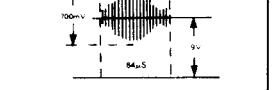
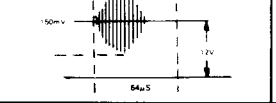
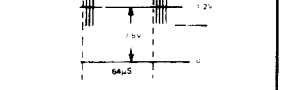
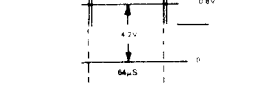
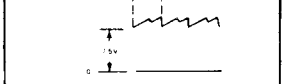
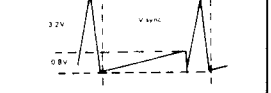
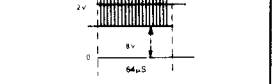
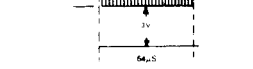
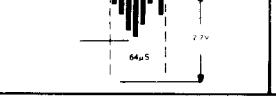
Q101	
E	1.9
B	2.4
C	12

Q102	
E	3.2
B	3.8
C	8.8

Q103	
E	8.4
B	8.8
C	12V

IC	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
171	3.7	7.3	5.8	3.1	4.5	4	0.2	0.2	0.2	12	5.6	6.5	1.8	0	1.6	12	32	12	0.1	0.4	0.2	12	2.7	2	6	8.2	10.5	4

WAVEFORMS

IC501 Pin 2 **1** 	IC501 Pin 1 **2** 	IC501 Pin 4 **3** 	IC501 Pin 6 **4** 	IC501 Pin 14 **5** 
IC501 Pin 16 **6** 	IC501 Pin 17 **7** 	IC501 Pin 18 **8** 	IC501 Pin 10 **9** 	IC501 Pin 11 **10** 
IC501 Pin 12 **11** 	IC501 Pin 13 **12** 	IC501 Pin 14 **13** 	IC501 Pin 16 **14** 	IC451 Pin 2 **15** 
IC451 Pin 3 **16**	IC451 Pin 4 **17** 	IC451 Pin 5 **18** 	IC451 Pin 6 **19** 	**20** 
IC1203 Pin 3 **21** 	IC1203 Pin 3 **22** 	IC1202 Pin 22 **23** 	IC601 Pin 2 **24** 	IC601 Pin 2 **25** 
IC601 Pin 5 **26** 	IC601 Pin 6 **27** 	IC601 Pin 9 **28** 	IC601 Pin11 **29** 	IC601 Pin 15 **30** 
IC601 Pin 16 **31** 	IC601 Pin 17 & 18 **32** 	IC601 Pin 19 **33** 	IC601 Pin 20 **34** 	IC601 Pin 21 **35**
IC601 Pin 22 **36** 	IC601 Pin 23 **37**	IC601 Pin 24 **38** 		

NOTE

(1) Location column refers to schematic diagram locations

(2) Items marked ⓢ or ⓔ are safety components and should only be replaced by specified parts.

DIFFERENCES FOR MODEL TC-1637UR FROM REPLACEMENT PARTS LIST

Ref No.	Part No.	Description		Loc.
		ADDITIONS		
R16	ERD25TJ181T	carbon	180Ω ± 5%	¼
R21	ERD25TJ392T	carbon	3.9kΩ ± 5%	¼W
R22	ERD25TJ122T	carbon	1.2kΩ ± 5%	¼W
R23	ERD25TJ471T	carbon	470Ω ± 5%	¼W
R24	ERD25TJ680T	carbon	68Ω ± 5%	¼W
R131	ERD50TJ331V	carbon	330Ω ± 5%	½W
R386	ERD25TJ272T	carbon	2.7kΩ ± 5%	¼W
R508 ⓢ	ERO25TKF1742	metal oxide	1.74kΩ ± 1%	¼W
R511	ERD25TJ221T	carbon	220Ω ± 5%	¼W
R522	ERD25TJ221T	carbon	220Ω ± 5%	¼W
R526	ERD25TJ333T	carbon	33kΩ ± 5%	¼W
R605	ERD25TJ422T	carbon	4.7kΩ ± 5%	¼W
R614	ERD25TJ223T	carbon	22kΩ ± 5%	¼W
R620	ERD25TJ183T	carbon	18kΩ ± 5%	¼W
R640	ERD25TJ823T	carbon	82kΩ ± 5%	¼W
R802 ⓢ	ERF5AK4R7	cement	4.7Ω ± 1%	5W
R810 ⓢ	ERF2AK6R8	cement	6.8Ω ± 1%	2W
R814	ERD75TAJ825	carbon	8.2MΩ ± 5%	¾W
R1214	ERD25TJ103T	carbon	10kΩ ± 5%	¼W
R1224	ERD25TJ471T	carbon	470Ω ± 5%	¼W
R1225	ERD25TJ471T	carbon	470Ω ± 5%	¼W
R1251	ERD25TJ391T	carbon	390Ω ± 5%	¼W
R1277	ERD25TJ473T	carbon	47kΩ ± 5%	¼W
R1278	ERD25TJ473T	carbon	47kΩ ± 5%	¼W
C21	ECCR1H100F5	ceramic	10 pF	50v
C22	ECKR1H102KB5	ceramic	1 nF	50v
C23	ECKR1H103ZF5	ceramic	10 nF	50v
C217	ECEA1CU471E	electrolytic	470 μF	16v
C231	ECKR1H103ZF5	ceramic	10 nF	50v
C252	ECKR1H103ZF5	ceramic	10 nF	50v
C273	ECQM1H153KV3	plastic film	15 nF	50v
C569	ECQM1H183KV3	plastic film	0.018 μF	50v
C817	ECKD3D821KBN	ceramic	820 pF	2kv
C1202	TCQM1H104KZ3	ceramic	0.1 μF	50v
D176	MA150TA5	diode		
Q21	2SC829	N.P.N. transistor		
Q803	2SD1391RL	N.P.N. transistor		
L21	TLT047L991R	4.7μH	coil	
L152	TLI157754	I.F.	coil	
L803	TLP6502		coil	
		CHANGES		
R13	ERD25TJ102T	carbon	1kΩ ± 5%	¼W
R212	ERQ14AJ100B	fusable	10Ω ± 5%	¼W
R251	ERG1ANJ820H	metal film	82Ω ± 5%	1W
R252	ERD50TJ470V	carbon	47Ω ± 5%	½W
R366	ERD50TJ152V	carbon	1.5kΩ ± 5%	½W
R408	ER025TKG8201	metal oxide	8.2kΩ ± 1%	¼W
R452	ERD50TJ471Y	carbon	470Ω ± 5%	½W
R460	ERD25TJ221T	carbon	220Ω ± 5%	¼W
R505 ⓢ	ERO25TKF1873	metal oxide	18.7kΩ ± 1%	¼W
R506	EVLS0MA00B13	control	1kΩB	
R562	ERD25TJ224T	carbon	220kΩ ± 5%	¼W
R637	ERD25TJ182T	carbon	1.8kΩ ± 5%	¼W
R1204	ERD25TJ472T	carbon	4.7kΩ ± 5%	¼W
R1234	ERD50TJ151T	carbon	150Ω ± 5%	½W
R1255	ERD25TJ391T	carbon	390Ω ± 5%	¼W
R1276	ERD25TJ101T	carbon	100Ω ± 5%	¼W
ⓢ	TNP17104	U P.C.B.		
ⓢ	TNP17523A	P P.C.B.		

Ref No.	Part No.	Description		Loc.
ⓢ	TNP17903	R P.C.B.		
ⓢ	TNP45141AA	B P.C.B.		
ⓢ	TNP62243AA	L P.C.B.		
ⓢ	TNP62244AA	Z P.C.B.		
ⓢ	TNP62898AA	E P.C.B.		
	TNQ1412 – 1	remote control transmitter		
	TPC192715	outer carton		
	TQB8E0086	operating instruction book		
	TQB8E0088	insert sheet		
	TQB8E1062	fanbag		
ⓢ	TSX2137 – 1	mains lead		
	TUC37730	horizontal output heatsink		
	TXAKP01NFG	video terminal sssembly		
ⓢ	TXFKU01NCG	rear cover		
ⓢ	TXFLK01MEG	deguass Coil		
	TXFY178600	cabinet complete		
	UV414	tuner		
C15	ECQM1H103KV3	plastic film	10 nF	50v
C101	ECCR1H070J5	ceramic	7 pF	50v
C109	ECQM1H822KB3	plastic film	8.2 nF	50v
C118	ECCR1H470JC5	ceramic	47 pF	50v
C172	ECCW1H330J5	ceramic	33 pF	50v
C215	ECEA1CU221B	electrolytic	220 μF	16v
C224	ECEA1HU2R2B	electrolytic	2.2 μF	50v
C302	ECKR1H151K5B	ceramic	150 pF	50v
C406	ECEA1CN101SE	electrolytic	100 μF	16v
C409	ECQM1H273KB3	plastic film	27 nF	50v
C504	ECEA1ES4R7B	electrolytic	4.7 μF	25v
C507	ECQM1H392JB3	plastic film	3.9 nF	50v
C568	ECEA1EU102E	electrolytic	1000 μF	25v
C611	ECCR1H101J5	ceramic	100 pF	50v
C802 ⓢ	ECQE12473MZB	plastic film	0.047 μF	1.2kv
C811	ECKD3A681	ceramic	680 pF	1kv
C1001	ECKE1H121KB	ceramic	120 pF	50v
C1103	ECEA0JK101	electrolytic	100 μF	6.3v
C1109	TCQM1H563KZ3	ceramic	56 nF	50v
C1205	TCQM1H104KZ3	ceramic	0.1 μF	50v
C1209	ECEA1HS010B	electrolytic	1 μF	50v
D601	OA91TP	diode		
D810	TVSE2808D	diode		
D851	TVSC2408M	diode		
IC371	TVSC4066BP	quad analogue switch		
X201	TSS120M2	crystal filter		
X1001	TE0A420K03	crystal		

CABINET PARTS

EAS10P133GF	speaker
EAS7DH02S	speaker
TBX1769200	TV/VTR knob(transmitter)
TBX2782700	channel andvolume buttons
TBX2782800	power Knob
TEG37557	case top(transmitter)
TEG37558 – 4	case bottom(transmitter)
TEG37559 – 5	battery cover(transmitter)
TES4215	power knob spring
THN1994 – 2S	CRT Nut
TJC6349	battery terminal common (transmitte
TKK178570	control door lid
TKK178571	hinge guide
TKP1719883 – 2	control panel door

Ref No.	Part No.	Description	Loc.
	TKP1754392	aluminium panel right	
	TKP1754401	tweeter aluminium panel	
	TKP1754751	aluminium panel(transmitter)	
	TKP2710021	infra red reciever smoked panel	
	TKP2710031	smoked panel	
	TLP16260	mains power supply transformer	
	TMM17569	rubber contact sheet(transmitter)	
	TTMW17198	control bracket	
	TMW17320	power knob push plate	
	TMZ179831	chassis foot left	
	TMZ179832	chassis foot right	
(S)	TNP10934	Y P.C.B.	
(S)	TNP10953BB	Q P.C.B.	
(S)	TNP17009AB	M P.C.B.	
(S)	TNP17010AA	W P.C.B.	
(S)	TNP17011	N P.C.B.	

Ref No.	Part No.	Description	Loc.

NOTE

(1) Location column refers to schematic diagram locations

(2) Items marked Ⓢ or ⊕ are safety components and should only be replaced by specified parts.

REPLACEMENT PARTS LIST

Ref No.	Part No.	Description			Loc.
		RESISTORS			
R12 Ⓢ	ERQ14AJ8R2P	fusable	8.2Ω ± 5%	¼W	B5
R13 Ⓢ	ERQ14AJ470P	fusable	47Ω ± 5%	¼W	B5
R17	ERD25TJ272T	carbon	2.7kΩ ± 5%	¼W	B5
R71	ERG1ANJ153H	metal film	15kΩ ± 5%	1W	B2
R101	ERD25TJ470T	carbon	47Ω ± 5%	¼W	B5
R102	ERD25TJ472T	carbon	4.7kΩ ± 5%	¼W	B5
R103	ERD25TJ122T	carbon	1.2kΩ ± 5%	¼W	B5
R104	ERD25TJ122T	carbon	1.2kΩ ± 5%	¼W	B5
R105	ERD25FJ820P	carbon	82Ω ± 5%	¼W	B5
R107	ERD25TJ273T	carbon	27kΩ ± 5%	¼W	B5
R108	ERD25TJ152T	carbon	1.5kΩ ± 5%	¼W	B6
R109	ERD25TJ334T	carbon	330kΩ ± 5%	¼W	B5
R111	ERD25TJ101T	carbon	100Ω ± 5%	¼W	B6
R112	ERD25TJ182T	carbon	1.8kΩ ± 5%	¼W	B6
R113	ERD25TJ182T	carbon	1.8kΩ ± 5%	¼W	B6
R114	ERD25TJ683T	carbo	68kΩ ± 5%	¼W	B5
R115	EVLS0MA00B14	control	10kΩB		B5
R116	ERD25TJ121T	carbon	120Ω ± 5%	¼W	B6
R117	ERD25TJ333T	carbon	33kΩ ± 5%	¼W	B6
R118	ERD25TJ272T	carbon	2.7kΩ ± 5%	¼W	B6
R119	ERD25TJ332T	carbon	3.3kΩ ± 5%	¼W	B6
R121	ERD25TJ562T	carbon	5.6kΩ ± 5%	¼W	B6
R122	ERD25TJ122T	carbon	1.2kΩ ± 5%	¼W	B6
R123	ERD25TJ221T	carbon	220Ω ± 5%	¼W	B6
R124	ERD25TJ182T	carbon	1.8kΩ ± 5%	¼W	B6
R153	ERD25VJ273W	carbon	27kΩ ± 5%	¼W	C6
R154	ERD25TJ683T	carbon	68kΩ ± 5%	¼W	B6
R171	ERD25TJ103T	carbon	10kΩ ± 5%	¼W	C6
R172	ERD50TJ473V	carbon	470kΩ ± 5%	½W	C6
R173	ERD25TJ473T	carbon	47kΩ ± 5%	¼W	B6
R175	ERD25TJ104T	carbon	100kΩ ± 5%	¼W	B6
R176	ERD25TJ124T	carbon	120kΩ ± 5%	¼W	B6
R177	ERD25TJ103T	carbon	10kΩ ± 5%	¼W	C6
R178	ERD25TJ102T	carbon	1kΩ ± 5%	¼W	A5
R179	ERD25TJ102T	carbon	1kΩ ± 5%	¼W	A5
R180	ERD25TJ562T	carbon	5.6kΩ ± 5%	¼W	C6
R201	ERD25TJ182T	ccarbon	1.8kΩ ± 5%	¼W	A7
R202	ERD25TJ151T	carbon	150Ω ± 5%	¼W	A7
R204	ERD25TJ471T	carbon	470Ω ± 5%	¼W	A7
R205	ERD50FJ151P	carbon	150Ω ± 5%	½W	B7
R207 Ⓢ	ERQ1CJ100	fusable	10Ω ± 5%	1W	B8
R208	ERD25TJ332T	carbon	3.3kΩ ± 5%	¼W	A8
R209	ERD25TJ153T	carbon	15kΩ ± 5%	¼W	A8
R211	ERD25TJ680T	carbon	68Ω ± 5%	¼W	A8
R212 Ⓢ	ERQ14AJ100P	fusable	10Ω ± 5%	¼W	A8
R215	ERD25TJ683T	carbon	68kΩ ± 5%	WW	A7
R216	ERD25TJ153T	carbon	15kΩ ± 5%	¼W	A7
R217	ERD25TJ473T	carbon	47kΩ ± 5%	¼W	A7
R225	ERD25TJ473T	carbon	47kΩ ± 5%	¼W	B8
R251	ERG1ANJ391H	metal film	390Ω ± 5%	1W	L1
R252	ERD50TJ680V	carbon	68Ω ± 5%	¼W	L1
R271	ERD25TJ472T	carbon	4.7kΩ ± 5%	¼W	A6
R272	ERD25TJ333T	carbon	33kΩ ± 5%	¼W	A7
R273	ERD25TJ333T	carbon	33kΩ ± 5%	¼W	A7
R275	ERD25TJ473T	carbon	47kΩ ± 5%	¼W	A6
R277	ERD25TJ104T	carbon	100kΩ ± 5%	¼W	A7
R301 Ⓢ	ERQ14AJ100P	fusable	10Ω ± 5%	¼W	C7
R305	ERD25TJ681T	carbon	680Ω ± 5%	¼W	C6
R306	ERD25TJ821T	carbon	820Ω ± 5%	¼W	C7
R307	ERD25TJ103T	carbon	10kΩ ± 5%	¼W	C7
R308	ERD25TJ222T	carbon	2.2kΩ ± 5%	¼W	C7

Ref No.	Part No.	Description			Loc.
R309	ERD25TJ122T	carbon	1.2kΩ ± 5%	¼W	C7
R310	ERD25TJ681T	carbon	680Ω ± 5%	¼W	C7
R311	ERD25TJ102T	carbon	1kΩ ± 5%	¼W	C7
R312	ERD25TJ183T	carbon	18kΩ ± 5%	¼W	C7
R313	ERD25TJ121T	carbon	120Ω ± 5%	¼W	C7
R315	ERD25TJ562T	carbon	5.6kΩ ± 5%	¼W	C7
R316	EVLS3MA00B33	control	3kΩB		C7
R317	ERD25TJ183T	carbon	18kΩ ± 5%	¼W	C7
R318	ERD25TJ562T	carbon	5.6kΩ ± 5%	¼W	C7
R319	EVLS0MA00B14	control	10kΩB		C7
R320	ERD25TJ821T	carbon	820Ω ± 5%	¼W	B8
R321	ERD25TJ333T	carbon	33kΩ ± 5%	¼W	C7
R322	ERD25TJ154T	carbon	150kΩ ± 5%	¼W	C7
R323	ERD25TJ824T	carbon	820kΩ ± 5%	¼W	C7
R324	ERD25TJ223T	carbon	22kΩ ± 5%	¼W	C7
R325	ERD25TJ473T	carbon	47kΩ ± 5%	¼W	C7
R327	ERD25TJ681T	carbon	680Ω ± 5%	¼W	B8
R328	ERD25TJ122T	carbon	1.2kΩ ± 5%	¼W	B8
R329	ERD25TJ102T	carbon	1kΩ ± 5%	¼W	B8
R331	ERD25TJ183T	carbon	18kΩ ± 5%	¼W	C7
R338	ERD25J682T	carbon	6.8kΩ ± 5%	¼W	B7
R340	ERD25TJ821T	carbon	820Ω ± 5%	¼W	C7
R341	ERD25TJ273T	carbon	27kΩ ± 5%	¼W	C7
R350	ERD25TJ101T	carbon	100Ω ± 5%	¼W	L2
R351	ERG2ANJ822H	metal film	8.2kΩ ± 5%	2W	L2
R352	ERG2ANJ822H	metal film	8.2kΩ ± 5%	2W	L2
R353	ERG2ANJ822H	metal film	8.2kΩ ± 5%	2W	L2
R354	ERD25TJ121T	carbon	120Ω ± 5%	¼W	L2
R355	ERD25TJ221T	carbon	220Ω ± 5%	¼W	L2
R356	ERD25TJ121T	carbon	120Ω ± 5%	¼W	L2
R357	EVLS3MA00B22	control	200ΩB		L2
R358	EVLS3MA00B22	control	200ΩB		L2
R359	ERD25TJ182T	carbon	1.8kΩ ± 5%	¼W	L2
R359	ERD25TJ182T	carbon	1.8kΩ ± 5%	¼W	L2
R360	ERD25TJ182T	carbon	1.8kΩ ± 5%	¼W	L2
R361	ERD25TJ182T	carbon	1.8kΩ ± 5%	¼W	L2
R362	EVLS3MA00B53	control	5kΩB		L2
R363	EVLS3MA00B53	control	5kΩB		L2
R364	EVLS3MA00B53	control	5kΩB		L2
R365	ERD50TJ152V	carbon	1.5kΩ ± 5%	½W	L2
R366	ERD50TJ152V	carbon	1.5kΩ ±5%	½W	L2
R366	ERD25TJ223T	carbon	22kΩ ± 5%	¼W	L2
R367	ERD50TJ152V	carbon	1.5kΩ ± 5%	½W	L2
R368	ERD25TJ224T	carbon	220kΩ ± 5%	¼W	L2
R369	ERD25TJ273T	carbon	27kΩ ± 5%	¼W	L2
R372	ER25TJ102T	carbon	1kΩ ± 5%	¼W	B6
R375	ERD25TJ102T	carbon	1kΩ ± 5%	¼W	B7
R378	ERD25TJ10TT	carbon	10kΩ ± 5%	¼W	B7
R379	ERD25TJ472T	carbon	4.7kΩ ± 5%	¼W	B6
R382	ERD25TJ750T	carbon	75Ω ± 5%	¼W	B6
R383	ERD25TJ23T	carbon	27kΩ ± 5%	¼W	A6
R384	ERD25TJ472T	carbon	4.7kΩ ± 5%	¼W	A6
R385	ERD25TJ682T	carbon	6.8kΩ ± 5%	¼W	A6
R388	ERD25TJ182T	carbon	1.8kΩ ± 5%	¼W	A6
R392	ERD25TJ822T	carbon	8.2kΩ ± 5%	¼W	A6
R393 Ⓢ	ERQ14AJ100P	fusable	10Ω ± 5%	¼W	A6
R396	ERD25TJ822T	carbon	8.2kΩ ± 5%	¼W	A6
R397	ERD25TJ223T	carbon	22kΩ ± 5%	¼W	A6
R401	ERD25TJ471T	carbon	470Ω ± 5%	¼W	A2
R402	ERD25TJ471T	carbon	470Ω ± 5%	¼W	A2
R403	ERD25TJ393T	carbon	39kΩ ± 5%	¼W	B2

Ref No.	Part No.	Description			Loc.
R404	ERD25TJ684T	carbon	680kΩ ± 5%	¼W	A2
R405	ERD25TJ154T	carbon	150kΩ ± 5%	¼W	A2
R406	ERD25TJ824T	carbon	820kΩ ± 5%	¼W	A3
R407	EVLS0MA00B1	control	10kΩB		A2
R408 Ⓢ	ERO25TKG8201	metal oxide	820Ω ± 1%	¼W	A2
R409	EVLS0MA00B24	control	20kΩB		A2
R410	ERD25TJ103T	carbon	10kΩ ± 5%	¼W	A2
R412	ERD25TJ562T	carbon	5.6kΩ ± 5%	¼W	B3
R413	ERD25TJ562T	carbon	5.6kΩ ± 5%	¼W	B3
R414	ERD25TJ681T	carbon	680Ω ± 5%	¼W	B3
R416	ERD25TJ684T	carbon	680kΩ ± 5%	¼W	A2
R417	ERD25TJ123T	carbon	12kΩ ± 5%	¼W	A2
R419 Ⓢ	ERQ12HJ100P	fusable	10Ω ± 5%	½W	A2
R451	ERD25TJ333T	carbon	33kΩ ± 5%	¼W	B3
R452	ERD50TJ471V	carbon	470Ω ± 5%	½W	A3
R453	ERD25TJ471T	carbon	470Ω ± 5%	¼W	B3
R455	ERG2ANJ182H	metal film	1.8kΩ ± 5%	2W	A4
R457	ERD50TJ6R8V	carbon	6.8Ω ± 5%	½W	B3
R458	ERD50TJ6R8V	carbon	6.8Ω ± 5%	½W	B3
R460	ERD25TJ222T	carbon	2.2kΩ ± 5%	¼W	B3
R461	ERD25TJ332T	carbon	3.3kΩ ± 5%	¼W	B3
R462	ERD25TJ332T	carbon	3.3kΩ ± 5%	¼W	B3
R467	ERD25TJ103T	carbon	10kΩ ± 5%	¼W	A3
R468	ERD25TJ392T	carbon	3.9kΩ ± 5%	¼W	A3
R469	ERD25TJ103T	carbon	10kΩ ± 5%	¼W	A3
R470 Ⓢ	ERO25TKG8201	metal oxide	820Ω ± 1%	¼W	A3
R501	ERD25TJ822T	carbon	8.2kΩ ± 5%	¼W	B2
R502	ERD25TJ122T	carbon	1.2kΩ ± 5%	¼W	B2
R503	ERD25TJ332T	carbon	3.3kΩ ± 5%	¼W	B2
R504	ERD25TJ273T	carbon	27kΩ ± 5%	¼W	B2
R505 Ⓢ	ERO25TKF2551	metal oxide	2.55kΩ ± 1%	¼W	B2
R506 Ⓢ	ERO25TKF1742	metal oxide	1.74kΩ ± 1%	¼W	B2
R506	EVLS0MA00B13	control	1kΩB		B2
R507	ERD25TJ272T	carbon	2.7kΩ ± 5%	¼W	B2
R509	ERD25TJ153T	carbon	15kΩ ± 5%	¼W	B2
R510	ERG2ANJ103H	metal film	10kΩ ± 5%	2W	B2
R512	ERD25TJ471T	carbon	470Ω ± 5%	¼W	B2
R513 Ⓢ	EQQ1CJP102S	fusable	1kΩ ± 5%	1W	B3
R514 Ⓢ	ERW12PKR22	wire wound	0.22Ω ± 1%	½W	B3
R515	ERG1ANJ392H	metal film	3.9kΩ ± 5%	1W	B3
R516	ERD50TJ221V	carbon	220Ω ± 5%	½W	B3
R517	EVLS0MA00B14	control	10kΩB		B2
R518 Ⓢ	ERO25TKF1873	metal oxide	18.7kΩ ± 1%	¼W	B2
R520	ERD25TJ682T	carbon	6.8kΩ ± 5%	¼W	A2
R521	ERD25TJ333T	carbon	33kΩ ± 5%	¼W	A2
R523	ERD25TJ472T	carbon	4.7kΩ ± 5%	¼W	A2
R524	ERD25TJ103T	carbon	10kΩ ± 5%	¼W	A2
R525	ERD25TJ103T	carbon	10kΩ ± 5%	¼W	A1
R527	ERD25TJ562T	carbon	5.6kΩ ± 5%	¼W	A1
R540	ERD25TJ394T	carbon	390kΩ ± 5%	¼W	B3
R541	ERD25TJ103T	carbon	10kΩ ± 5%	¼W	B3
R542	ERD25TJ103T	carbon	10kΩ ± 5%	¼W	B2
R543	ERD25TJ823T	carbon	82kΩ ± 5%	¼W	B2
R551 Ⓢ	ERF7ZK8R2	cement	8.2Ω ± 1%	7W	C3
R552 Ⓢ	ERQ12HKR82P	fusable	0.82Ω ± 1%	½W	C3
R553 Ⓢ	ERQ1CJP102S	fusable	1kΩ ± 5%	1W	B4
R554 Ⓢ	ERQ12HJ151P	fusable	150Ω ± 5%	½W	B4
R555 Ⓢ	ERQ12HJ1R5P	fusable	1.5Ω ± 5%	½W	C3
R557 Ⓢ	ERQ2CJP2R2S	fusable	2.2Ω ± 5%	2W	C4
R558	ERD25TJ223T	carbon	22kΩ ± 5%	¼W	C3
R560	ERD50TJ102V	carbon	1kΩ ± 5%	½W	A1
R562	ERD25TJ333T	carbon	33kΩ ± 5%	¼W	C2
R563 Ⓢ	ERQ1CJP270S	fusable	27Ω ± 5%	1W	C3
R601	ERD25TJ123T	carbon	12kΩ ± 5%	¼W	B7

Ref No.	Part No.	Description			Loc.
R602	ERD25TJ103T	carbon	10kΩ ± 5%	¼W	B7
R603	ERD25TJ152T	carbon	1.5kΩ ± 5%	¼W	B7
R606	ERD25TJ272T	carbon	2.7kΩ ± 5%	¼W	B7
R607	ERD25TJ223T	carbon	22kΩ ± 5%	¼W	B7
R608	ERD25TJ222T	carbon	2.2kΩ ± 5%	¼W	B7
R609	ERD25TJ122T	carbon	1.2kΩ ± 5%	¼W	C7
R612	ERD25TJ103T	carbon	10kΩ ± 5%	¼W	B7
R613	EVLS0MA00B24	control	20kΩB		B7
R615	ERD25TJ102T	carbon	1kΩ ± 5%	¼W	B7
R616	ERD25TJ224T	carbon	220kΩ ± 5%	¼W	C7
R617	EVLS3MA00B13	control	1kΩB		C8
R618	ERD25TJ101T	carbon	100Ω ± 5%	¼W	C8
R619	ERD25TJ101T	carbon	100Ω ± 5%	¼W	C8
R621	ERD25TJ391T	carbon	390Ω ± 5%	¼W	C8
R622	ERD25TJ222T	carbon	2.2kΩ ± 5%	¼W	C8
R623	ERD25TJ474T	carbon	470kΩ ± 5%	¼W	C8
R624	ERD25TJ272T	carbon	2.7kΩ ± 5%	¼W	C8
R625	EVLS3MA00B14	control	10kΩB		C8
R626	ERD25TJ272T	carbon	2.7kΩ ± 5%	¼W	C8
R627	EVLS3MA00B13	control	1kΩB		B8
R628	ERD25TJ102T	carbon	1kΩ ± 5%	¼W	B7
R629	ERD25TJ273T	carbon	27kΩ ± 5%	¼W	B8
R630	ERD25TJ123T	carbon	12kΩ ± 5%	¼W	B6
R631	EVLS3MA00B53	control	5kΩB		B8
R632	ERD25TJ273T	carbon	27kΩ ± 5%	¼W	B8
R633	ERD25TJ102T	carbon	1kΩ ± 5%	¼W	B7
R634	ERD25TJ272T	carbon	2.7kΩ ± 5%	¼W	B7
R636	ERD25TJ271T	carbon	270Ω ± 5%	¼W	B8
R637	ERD25TJ271T	carbon	270Ω ± 5%	¼W	B8
R638	ERD25TJ271T	carbon	270Ω ± 5%	¼W	B8
R641	ERD25TJ222T	carbon	2.2kΩ ± 5%	¼W	B8
R642	ERD25TJ222T	carbon	2.2kΩ ± 5%	¼W	B8
R643	ERD25TJ222T	carbon	2.2kΩ ± 5%	¼W	B8
R644	ERD25TJ223T	carbon	22kΩ ± 5%	¼W	B7
R645	ERD25TJ472T	carbon	4.7kΩ ± 5%	¼W	C7
R647	ERD25TJ272T	carbon	2.7kΩ ± 5%	¼W	C3
R801	ERC12ZGJ335V	solid	3.3MΩ ± 5%	½W	L1
R803	ERD50TJ564V	carbon	560kΩ ± 5%	½W	C1
R805	ERD25TJ391T	carbon	390Ω ± 5%	¼W	C1
R806	ERD25TJ681T	carbon	680Ω ± 5%	¼W	C1
R807	ERD25TJ103T	carbon	10kΩ ± 5%	¼W	C1
R808	EVLS0MA00B22	control	200ΩB		C1
R809	ERD25TJ681T	carbon	680Ω ± 5%	¼W	C1
R811	ERD25TJ1R0T	carbon	1Ω ± 5%	¼W	C2
R812	ERG1ANJ470H	metal film	47Ω ± 5%	1W	B1
R813	ERG1ANJ683H	metal film	68kΩ ± 5%	1W	B2
R815 Ⓢ	ERQ12HKR39P	fusable	0.39Ω ± 1%	½W	B1
R816	ERC12ZGK825V	solid	8.2MΩ ± 1%	½W	C2
R817	ERD25TJ1R0T	carbon	1Ω ± 5%	¼W	C2
R851 Ⓢ	ERQ12HJ3R9P	fusable	3.9Ω ± 5%	½W	B1
R852 Ⓢ	ERQ12HKR82P	fusable	0.82Ω ± 1%	½W	B2
R1001	ERD10TJ332T	carbon	33kΩ ± 5%	1W	
R1002	ERD10TJ470T	carbon	47Ω ± 5%	⅛W	
R1003	ERD10TJ223T	carbon	22kΩ ± 5%	1W	
R1004	ERD25TJ1R0T	carbon	1Ω ± 5%	¼W	
R1103 Ⓢ	ERQ14AJ220P	fusable	22Ω ± 5%	¼W	H1
R1201	ERD25TJ472T	carbon	4.7kΩ ± 5%	¼W	H2
R1202	ERD25TJ473T	carbon	47kΩ ± 5%	¼W	H1
R1203	ERD25TJ472T	carbon	4.7kΩ ± 5%	¼W	H2
R1204	ERD25TJ472T	carbon	4.7kΩ ± 5%	¼W	H2
R1204	ERD25TJ103T	carbon	10kΩ ± 5%	¼W	H2
R1205	ERD25TJ472T	carbon	4.7kΩ ± 5%	¼W	H2
R1206	ERD25TJ472T	carbon	4.7kΩ ± 5%	¼W	H2

Ref. No.	Part No.	Description			Loc.
R1207	ERD25TJ103T	carbon	10kΩ ± 5%	¼W	H1
R1208	ERD25TJ103T	carbon	10kΩ ± 5%	¼W	H2
R1209	ERD25TJ103T	carbon	10kΩ ± 5%	¼W	H2
R1210	ERD25TJ152T	carbon	1.5kΩ ± 5%	¼W	H2
R1211	ERD25TJ223T	carbon	22kΩ ± 5%	¼W	H2
R1212	ERD25TJ152T	carbon	1.5kΩ ± 5%	¼W	H2
R1215	ERG2ANJ680H	metal film	68Ω ± 5%	2W	I2
R1217	ERD25TJ103T	carbon	10kΩ ± 5%	¼W	H1
R1218	ERD25TJ102T	carbon	1kΩ ± 5%	¼W	H2
R1219	ERD25TJ472T	carbon	4.7kΩ ± 5%	¼W	H2
R1221	ERD25TJ471T	carbon	470Ω ± 5%	¼W	H2
R1222	ERD25TJ471T	carbon	470Ω ± 5%	¼W	H2
R1223	ERD25TJ471T	carbon	470Ω ± 5%	¼W	H2
R1226	ERD25TJ471T	carbon	470Ω ± 5%	¼W	H2
R1227	ERD25TJ471T	carbon	470Ω ± 5%	¼W	H2
R1228	ERD25TJ471T	carbon	470Ω ± 5%	¼W	H2
R1229	ERD25TJ471T	carbon	470Ω ± 5%	¼W	H2
R1232	ERD25TJ471T	carbon	470Ω ± 5%	¼W	H2
R1233	ERD25TJ105T	carbon	1MΩ ± 5%	¼W	I2
R1234	ERD50TJ151V	carbon	150Ω ± 5%	½W	I2
R1235	ERD25T223T	carbon	22kΩ ± 5%	¼W	I2
R1236	ERD25TJ223T	carbon	22kΩ ± 5%	¼W	I2
R1237	ERD25TJ562T	carbon	5.6kΩ ± 5%	¼W	I2
R1238	ERD25TJ471T	carbon	470Ω ± 5%	¼W	H2
R1239	ERD25TJ471T	carbon	470Ω ± 5%	¼W	H2
R1242	ERD25TJ103T	carbon	10kΩ ± 5%	¼W	H2
R1243	ERD25TJ473T	carbon	47kΩ ± 5%	¼W	H2
R1244	ERD25TJ122T	carbon	1.2kΩ ± 5%	¼W	H2
R1245 Ⓢ	ERQ14AJ3R3P	fusable	3.3Ω ± 5%	¼W	H2
R1246	ERD25TJ221T	carbon	220Ω ± 5%	¼W	H2
R1252	ERD25TJ391T	carbon	390Ω ± 5%	¼W	H1
R1253	ERD25TJ391T	carbon	390Ω ± 5%	¼W	H1
R1254	ERD25TJ391T	carbon	390Ω ± 5%	¼W	H1
R1255	ERD25TJ471T	carbon	470Ω ± 5%	¼W	H1
R1255	ERD25TJ391T	carbon	390Ω ± 5%	¼W	H1
R1256	ERD25TJ391T	carbon	390Ω ± 5%	¼W	H1
R1257	ERD25TJ391T	carbon	390Ω ± 5%	¼W	H1
R1258	ERD25TJ391T	carbon	390Ω ± 5%	¼W	H1
R1259	ERD25TJ391T	carbon	390Ω ± 5%	¼W	H1
R1260	ERD25TJ471T	carbon	470Ω ± 5%	¼W	H1
R1261	ERD25TJ221T	carbon	220Ω ± 5%	¼W	H1
R1262	ERD25TJ391T	carbon	390Ω ± 5%	¼W	H1
R1263	ERD25TJ391T	carbon	390Ω ± 5%	¼W	I1
R1264	ERD25TJ391T	carbon	390Ω ± 5%	¼W	I1
R1265	ERD25TJ391T	carbon	390Ω ± 5%	¼W	I1
R1266	ERD25TJ391T	carbon	390Ω ± 5%	¼W	I1
R1267	ERD25TJ101T	carbon	100Ω ± 5%	¼W	I2
R1268	EVJFJAE25B14	control	10kΩB		I1
R1276	ERD25TJ101T	carbon	100Ω ± 5%	¼W	I2
R1276	ERD25TJ473T	carbon	47kΩ ± 5%	¼W	I2

CAPACITORS

C11	ECEA50Z1B	electrolytic	1 μF	50v	B5
C12	ECEA00ZR33B	electrolytic	0.33 μF	50v	B5
C13	ECKR1H103ZF5	ceramic	10 nF	50v	A5
C14	ECEA1CS330B	electrolytic	33 μF	16v	
C15	ECEA50ZR22B	electrolytic	0.22 μF	50v	B5
C16	ECCR1H390JC5	ceramic	39 pF	50v	
C26	ECQM1H104KV3	plastic film	0.1 μF	50v	A5
C27	ECKF1H103ZF	ceramic	10 nF	50v	B5
C28	ECKF1H103ZF	ceramic	10 nF	50v	B5
C29 Ⓢ	ECCF1H150J5	ceramic	15 pF	50v	B5

Ref No.	Part No.	Description			Loc.
C101	ECCR1H470JC5	ceramic	47 pF	50v	
C102	ECKR1H102KB5	ceramic	1 nF	50v	B5
C103	ECKR1H152KB5	ceramic	1.5 nF	50v	B5
C104	ECKR1H102KB5	ceramic	1 nF	50v	B5
C105	ECKR1H103ZF5	ceramic	10 nF	50v	B5
C106	ECEA1CU331B	electrolytic	330 μF	16v	
C107	ECKR1H103ZF5	ceramic	10 nF	50v	B5
C108	ECEA50ZR15B	electrolytic	0.15 μF	50v	B5
C109	ECQM1H822KV3	plastic film	8.2 nF	50v	B5
C110	ECKR1H272KB5	ceramic	2.7 nF	50v	B6
C111	ECEA1HSR47B	electrolytic	0.47 μF	50v	B5
C112	ECEA1CU102E	electrolytic	1000 μF	16v	B6
C113	ECKR1H103ZF5	ceramic	10 nF	50v	B6
C114	ECEA1HS010B	electrolytic	1 μF	50v	B6
C115 Ⓢ	ECEA16Z22B	electrolytic	22 μF	16v	A5
C116	ECKR1H152KB5	ceramic	1.5 nF	50v	B6
C117	ECCR1H180JC5	ceramic	18 pF	50v	
C118	ECCR1H470J5	ceramic	47 pF	50v	
C119	ECKF1H103ZF	ceramic	10 nF	50v	B5
C120	ECEA1CU331B	electrolytic	330 μF	16v	
C121	ECCR1H121J5	ceramic	120 pF	50v	
C151	ECKR1H102KB5	ceramic	1 nF	50v	B6
C152	ECCR1H330JC5	eeramic	33 pF	50v	
C171	ECQM1H473KV3	plastic film	0.447 μF	50v	A5
C172 Ⓢ	ECW1H330JC5	ceramic	33 pF	50v	B5
C173	ECKR1H103ZF5	ceramic	10 nF	50v	B5
C174	ECEA1HS100B	electrolytic	10 μF	50v	C6
C175	ECQV05105JCW	plastic film	1 μF	50v	C5
C178	ECKR1H222KB5	ceramic	2.2 nF	50v	B6
C179	ECQV05474JC	plastic film	0.47 μF	500v	C6
C203	ECQM1H103KV3	plastic film	10 nF	50v	A7
C204	ECQM1H102KV3	plastic film	1 nF	50v	A8
C205	ECEA1HN010SB	electrolytic	1 μF	50v	A8
C206	ECEA50ZR1B	electrolytic	0.1 μF	50v	A7
C207	ECCR1H120JC5	ceramic	12 pF	50v	
C208	ECEA1CU331B	electrolytic	330 μF	16v	A7
C209	ECKR1H103ZF5	ceramic	10 nF	50v	B7
C212	ECEA1HN010SB	electrolytic	1 μF	50v	A8
C213	ECEA1EU471E	electrolytic	470 μF	25v	A8
C214	ECKR1H103ZF5	ceramic	10 nF	50v	A8
C215	ECEA1HS010B	electrolytic	1 μF	50v	A8
C216	ECEA1CS330B	electrolytic	33 μF	16v	A8
C218	ECQM1H473KV3	plastic film	0.047 μF	50v	B8
C220	ECCR1H470K5	ceramic	47 pF	50v	A7
C224	ECEA1HS2R2B	electrolytic	2.2 μF	50v	A7
C230	ECQM1H823KZW	plastic film	82 nF	50v	B8
C251	ECEA1EN4R7SB	electrolytic	4.7 μF	25v	L2
C271	ECEA1HN010SB	electrolytic	1 μF	50v	A6
C272	ECEA1CS100B	electrolytic	10 μF	16v	A6
C301	ECEA1CS100B	electrolytic	10 μF	16v	C7
C302	ECKR1H151KB5	ceramic	150 pF	50v	C7
C303	ECEA1CS100B	electrolytic	10 μF	16v	C7
C304	ECEA1CS100B	electrolytic	10 μF	16v	C7
C305	ECEA1CS100B	electrolytic	10 μF	16v	C7
C306	ECEA1ES4R7B	elettrolytic	4.7 μF	25v	C7
C308	ECCR1H330JP5	ceramic	33 pF	50v	C7
C309	ECCR1H330J5	ceramic	33 pF	50v	C7
C311	ECEA1HS010B	electrolytic	1 μF	50v	B8
C312	ECKR1H221KB5	ceramic	220 pF	50v	C7
C313	ECEA1CU470B	electrolytic	47 μF	16v	C8
C314	ECQM1H152KV3	plastic film	1.5 nF	50v	C8
C351	ECCR1H271J5	ceramic	270 pF	50v	L2
C352	ECCR1H331J5	ceramic	330 pF	50v	L2

Ref No.	Part No.	Description			Loc.
C353	ECCR1H271J5	ceramic	270 pF	50v	L2
C354	ECEA1HS100B	electrolytic	10 μF	50v	L2
C355 Ⓢ	ECKC3D152KBN	ceaamic	1.5 nF	2kv	L2
C356	ECEA2ES010E	electrolytic	1 μF	250v	L2
C357	ECKW2H152KB2	ceramic	1.5 nF	500v	L2
C358	ECEA1HU220B	electrolytic	22 μF	50v	L2
C381	ECCR1H120J5	ceramic	12 pF	50v	A6
C382	ECEA1CS100B	electrolytic	10 μF	16v	A6
C383	ECKR1H103ZF5	ceramic	10 nF	50v	A6
C401	ECEA1CS100B	electrolytic	10 μF	16v	A2
C402	ECEA1HS2R2B	electrolytic	2.2 μF	50v	A2
C403	ECKR1H471KB5	ceramic	470 pF	50v	B2
C404	ECQM1H183KV3	plastic film	O.018 μF	50v	B2
C405	ECSF16E3R3YB	tantalum	3.3 μF	16v	A2
C406	ECSF16E3R3VB	tantalum	3.3 μF	16v	B2
C407	ECEA1CN101SE	electrolytic	100 μF	16v	B3
C408	ECEA1CU101B	electrolytic	100 μF	16v	A2
C409	ECQM1H273KV3	plastic film	0.027 μF	50v	A2
C410	ECQM1H393KV3	plastic film	0.039 μF	50v	A2
C451	ECEA1VU222E	electrolytic	2200 μF	50v	B3
C452	ECQM1H822KV3	plastic film	8.2 nF	50v	B3
C453	ECKR2H561KB2	ceramic	560 pF	500v	A3
C454	ECEA1VU101B	electrolytic	100 μF	35v	A3
C455	ECQM1H56KZ3	plastic film	56 nF	50v	A3
C457 Ⓢ	ECQM1273KZW	plastic film	0.027 μF	1 2kv	A3
C458	ECEA1VU102E	electrolytic	1000 μF	35v	B3
C459	ECEA1HS2R2B	electrolytic	2.2 μF	50v	B3
C460	ECSF16E10VB	tantalum	10 μF	16v	B3
C462	ECKR1H103ZF5	ceramic	10 nF	50v	A3
C463	ECQM1H224JVW	plastic film	0.22 μF	50v	A3
C501	ECKR1H561KB5	ceramic	560 pF	50v	B2
C502	ECKR1H271KB5	ceramic	270 pF	50v	B2
C503	ECQM1H562KV3	plastic film	5.6 nF	50v	B2
C504	ECQM1H104KZ3	plastic film	0.1 μF	50v	B2
C505	ECQM1H392KV3	plastic film	3.9 nF	50v	B2
C506	ECEA1ES4R7B	electrolytic	4.7 μF	25v	B2
C507	ECQM1H392JV3	plastic film	3.9 nF	50v	B2
C508	ECQP1392GZ3	plastic film	3900 pF	100v	B2
C509	ECEA1CS100B	electrolytic	10 μF	16v	B2
C510	ECEA1EU470B	electrolytic	47 μF	25v	B2
C511	ECKR2H152KB2	ceramic	1.5 pF	500v	B3
C512	ECKR1H102KB5	ceramic	1 nF	50v	A2
C513	ECEA1CS100B	electrolytic	10 μF	16v	A1
C540	ECEA1JS100B	electrolytic	10 μF	63v	B3
C550 Ⓢ	ECKD3D561KBN	ceramic	560 pF	2kv	B4
C551	ECEA2CS4R7E	electrolytic	4.7 μF	160v	B4
C552	ECQF2H474JZA	plastic film	0.47 μF	500v	B4
C553 Ⓢ	ECEA160N3R3E	electrolytic	3.3 μF	16	C4
C555	ECEA2ES100E	electrolytic	10 μF	250v	C3
C556 Ⓢ	ECKD3D122JBN	ceramic	1.2 nF	2kv	B3
C557 Ⓢ	ECKD3D471JBN	ceramic	470 pF	2kv	B4
C558 Ⓢ	ECKD3D122JBN	ceramic	1.2 nF	2kv	B3
C559 Ⓢ	ECKD3D122JBN	ceramic	1.2 nF	2kv	B3
C560 Ⓢ	ECKD3D122JBN	ceramic	1.2 nF	2kv	B3
C561 Ⓢ	ECKD3D122JBN	ceramic	1.2 nF	2kv	B3
C562	ECKR2H471KB2	ceramic	470 pF	500v	C3
C563	ECEA1HU470B	electrolytic	47 μF	50v	C3
C565	ECKR2H471KB2	ceramic	470 pF	500v	C3
C568	ECQM1H183KV3	plastic film	O.018 μF	50	C3
C570	ECQM1H473KV3	plastic film	0.047 μF	50v	B3
C573 Ⓢ	ECKD3D122JBN	ceramic	1.2 nF	2kv	B3
C601	ECEA1HSR47B	electrolytic	0.47 μF	50v	B7

Ref No.	Part No.	Description			Loc.
C602	ECKR1H182KB5	ceramic	1.8 nF	50v	B7
C603	ECKR1H152KB5	ceramic	1.5 nF	50v	B7
C605	ECKR1H561KB5	ceramic	560 pF	50v	B7
C606	ECCR1H560JC5	ceramic	56 pF	50v	B7
C608	ECCR1H120JP5	ceramic	12 pF	50v	B7
C609	ECCR1H101JP5	ceramic	100 pF	50v	B7
C611	ECCR1H1O1J5	ceramic	100 pF	50v	B7
C613	ECEA1CU470B	electrolytic	47 μF	16v	C7
C614	ECKR1H103ZF5	ceramic	10 nF	50v	C7
C615	ECEA1ES4R7B	electrolytic	4.7 μF	25v	C7
C616	ECEA1HS010B	electrolytic	1 μF	50v	C7
C617	ECKR1H103ZF5	ceramic	10 nF	50v	C7
C618	ECEA1HS010B	electrolytic	1 μF	50v	C7
C619	ECKR1H103ZF5	ceramic	10 nF	50v	C8
C621	ECKR1H103ZF5	ceramic	10 nF	00v	C8
C622	ECQV05274JC3	plastic film	0.27 μF	50v	C8
C623	ECCR1H101J5	ceramic	100 pF	50v	C8
C624	ECCR1H470J5	ceramic	47 pF	50v	C8
C625	ECQM1H223KV3	plastic film	0.022 μF	50v	B8
C626	ECQM1H223KV3	plastic film	0.022 μF	50v	B8
C627	ECEA1HN010SB	electrolytic	1 μF	50v	B7
C628	ECCR1H470J5	ceramic	47 pF	50v	B7
C629	ECCR1H470J5	ceramic	47 pF	50v	B7
C631	ECCR1H180J5	ceramic	18 pF	50v	B7
C632	ECKR1H103ZF5	ceramic	10 nF	50v	B7
C633	ECKR1H103ZF5	ceramic	10 nF	50v	B7
C634	ECCR1H100DC5	ceramic	10 pF	50v	B7
C635	ECCR1H680J5	ceramic	68 pF	50v	B7
C636	ECCR1H181KW5	ceramic	180 pF	50v	B7
C637	ECCR1H030CC5	ceramic	3 pF	50v	B7
C638 Ⓢ	ECKF1H103ZF	ceramic	10 nF	50v	B7
C801 Ⓢ	ECQE12473MZ	plastic film	0.047 μF	1.2kv	L1
C802 Ⓢ	ECQE12473KZB	plastic film	47 nF	1.2kv	L1
C803	ECKW2H472PE8	ceramic	4.7 nF	500v	B1
C804	ECKW2H472PE8	ceramic	4.7 nF	500v	B1
C805	ECKW2H472PE8	ceramic	4.7 nF	500v	B1
C806	ECKW2H472PE8	ceramic	4.7 nF	500v	B1
C807	ECET2GH101X	electrolytic	100 μF	200v	B1
C808	ECEA16Z47B	electrolytic	47 μF	16v	B1
C809	ECQM1H104KZ3	plastic film	0.1 μF	50v	B1
C810	ECKW2H103PE8	ceramic	10 nF	500v	B2
C811 Ⓢ	ECKD3A681KBN	ceramic	680 pF	1kv	B2
C812 Ⓢ	ECKD3A681KBN	ceramic	680 pF	1kv	C2
C813 Ⓢ	ECKDHS472MD	ceramic	4.7 nF (AC)	250v	C2
C814 Ⓢ	EKKDHS472MD	ceramic	4.7 nF (AC)	250v	C2
C815	ECKR2H471KB2	ceramic	470 pF	500v	B1
C831 Ⓢ	ECKDHS222MD	ceramic	2.2 nF (AC)	250v	L1
C832 Ⓢ	ECKDHS222MD	ceramic	2.2 nF (AC)	250v	L1
C851 Ⓢ	ECKD3D821KBN	ceramic	820 pF	2kv	B1
C852	ECKR2H561KB2	ceramic	560 pF	500v	B1
C853	ECKR2H221KB2	ceramic	220 pF	500v	B2
C854	ECEA2CS101E	electrolytic	100 μF	160v	B1
C855	ECEA1VU101B	electrolytic	100 μF	35v	B1
C856	ECEA1EU331E	electrolytic	330 μF	25v	B2
C857	ECEA1EU102E	electrolytic	1000 μF	25v	B2
C1001	ECKF1H121KB	ceramic	120 pF	50v	
C1002	ECKF1H471KB	ceramic	470 pF	50v	
C1003 Ⓢ	ECEA0JK101	electrolytic	100 μF	6.3v	
C1101	ECKR1H103ZF5	ceramic	10 nF	50v	H1
C1102	ECQV05473JC3	plastic film	0.047 μF	50v	H1
C1103	ECQM1H563KZ3	plastic film	56 nF	50v	H1
C1104	ECKR1H103ZF5	ceramic	10 nF	50v	H1

Ref. No.	Part No.	Description			Loc.
C1105	ECQV05473JC3	plastic film	0.047 μF	50v	H1
C1106	ECQV05472JC3	plastic film	4.7 nF	50v	H1
C1107	ECQP1682JZ3	plastic film	6.8 nF	100v	H1
C1108 Ⓢ	ECEA16Z100B	electrolytic	10 μF	16v	H1
C1109	ECQM1H563KZ3	plastic film	56 nF	50v	H1
C1111	ECKR1H152KB5	ceramic	1.5 nF	50v	H1
C1204	ECEA1VS100B	electrolytic	10 μF	35v	H2
C1205	ECQM1H104KZ3	plastic film	0.1 μF	50v	I2
C1206	ECEA1CU102E	electrolytic	1000 μF	16v	I2
C1208 Ⓢ	ECEA0JU222E	electrolytic	2200 μF	6.3v	H2
C1209	ECEA1CS010B	electrolytic	1 μF	16v	I2
C1210	ECEA1VU221E	electrolytic	220 μF	35v	I2
C1211	ECKR1H103ZF5	ceramic	10 nF	50v	I2
C1212	ECKR1H102KB5	ceramic	1 nF	50v	H2
C1213	ECKR1H102KB5	ceramic	1 nF	50v	H2
C1214 Ⓢ	ECCR1H270K5	ceramic	27 pF	50v	I2
C1215 Ⓢ	ECCR1H270K5	ceramic	27 pF	50v	I2
C1216	ECEA1CN100SB	electrolytic	10 μF	16v	H2
C1218	ECKR1H103ZF5	ceramic	10 nF	50v	I2
C1219	ECKR1H103ZF5	ceramic	10 nF	50v	I2
C1220	ECKR1H103ZF5	ceramic	10 nF	50v	H2
C1221	ECKR1H103ZF5	ceramic	10 nF	50v	H1
C1222	ECKR1H103ZF5	ceramic	10 nF	50v	H2
C1224	ECKR1H103ZF5	ceramic	10 nF	50v	H2
C1225	ECEA1CS100B	electrolytic	10 μF	16v	H1
C1226	ECEA1CS100B	electrolytic	10 μF	16v	I2

DIODES

D171	MA150TA5	diode	C5
D172	MA320	varicap diode	C5
D173	MA320	varicap diode	B6
D174	MA150TA5	diode	C5
D201	MA150TA5	diode	B8
D301	MA150TA5	diode	C7
D302	MA150TA5	diode	C7
D304	MA150TA5	diode	B8
D305	TVSRD13EBZ	13v zener	B8
D306	TVSRD13EBZ	13v zener	B8
D307	TVSRD13EBZ	13v zener	B8
D308	MA150TA5	diode	B8
D371	MA150TA5	diode	B6
D372	MA150TA5	diode	A6
D373	MA150TA5	diode	A6
D401	OA91TP	diode	A2
D451	TVSEM1ZV	diode	A3
D453	MA150TA5	diode	A3
D457	MA150TA5	diode	A3
D501	TVSRD11EB3Z	11v zener	B2
D540	TVSRD36EZ	36V zener	B3
D541	TVSRD24EB1Z	24v zener	A1
D551	MA162TA5	diode	C2
D552	TVSES1V	diode	B3
D553	TVSES1V	diode	C3
D555	TVSEU2V	diode	C3
D556	MA150TA5	diode	B2
D601	0A91TP	diode	B7
D602	TVS1N4148TE	diode	B7
D605	MA150TA5	diode	B7
D606	TVSRD6.2EB2Z	6.2V zener	B7
D801	TVSRM10BV	diode	B1
D802	TVSRM10BV	diode	B1
D803	TVSRM10BV	diode	B1
D804	TVSRM10BV	diode	B1

Ref No.	Part No.	Description	Loc.
D805	232266293009	diode	C1
D806	TVSRD6.2EB2Z	6.2V zener	C1
D807	TVSEU2V	diode	B1
D808	MA170	diode	C1
D809	TVSEU2V	diode	C2
D810	TVSB2808D	diode	B2
D811	TVSES1ZV	diode	C1
D851	TVSE2408M	diode	B1
D852	TVSEU2V	diode	B1
D853	TVSEU2V	diode	B2
D854	TVSSR2KNV	diode	B2
D855 Ⓢ	ERZC10DK621	diode	B1
D1001	TVSSE303A	diode	
D1002	TVSSE303A	diode	
D1003	MA154WK	diode	
D1004	MA154WK	diode	
D1005	MA154WK	diode	
D1006	MA154WK	diode	
D1101	TVSPH302	L.E.D.	H1
D1201	MA150TA5	diode	H2
D1202	MA150TA5	diode	H2
D1203	MA150TA5	diode	H2
D1204	MA150TA5	iiode	H2
D1206	MA150TA5	diode	H2
D1207	MA150TA5	diode	H2
D1208	TVSS1WB10	diode	I2
D1209	TVSEM1ZV	diode	I2
D1210	MA150TA5	diode	I2
D1211	MA150TA5	diode	I2
D1213	MA150TA5	diode	I2
D1214	MA150TA5	diode	H2
D1219	MA150TA5	diode	I2
D1251	LN81RPH	diode	H1
D1252	LN38GP	L.E.D.	H1
D1253	LN524GA	display	H1

I.C.

IC1001	MN6030B	remote control transmitter I.C.	
IC101	TDA2541	V.I.F. processor	B6
IC1101	TDA3048	infra red reciever I.C.	H1
IC1201	TVSM5G1400P	control memory I.C.	H2
IC1202	N74LS26N	quad two input nand gate	H2
IC1203	MAB8440D020	control I.C.	H2
IC1204	TVSL78M05RB	I.C. regulator	I2
IC1205	SAA1061	seven segement display driver I.C.	H1
IC171	SAB3035	microprocessor control I.C.	C5
IC201	AN5256	S.I.F audio I.C.	A8
IC371	TVSTC4066BP	quad analogue switch	A6
IC451	AN5221	vertical timebase I.C.	A3
IC501	AN5435	timebase jungle I.C.	B2
IC502	TVSL78M12RB	I.C. regulator	C3
IC601	TVSUPC1365C	video processor I.C.	B7
IC70	TVSUPC574J	30v regulator I.C.	B1

TRANSISTORS

Q101	BF370	N.P.N. transistor	B5
Q102	2SD637	N.P.N. transistor	B6
Q103	2SD637	N.P.N. transistor	B6
Q201	2SB642	P.N.P. transistor	A7
Q302	2SD637	N.P.N. transistor	C7
Q303	2SD637	N.P.N. transistor	C7
Q351	2SC2923RL	N.P.N. transistor	L2
Q352	2SC2923RL	N.P.N. transistor	L2
Q353	2SC2923RL	N.P.N. transistor	L2

Ref No.	Part No.	Description		Loc.
Q372	2SD637	N.P.N. transistor		B6
Q373	2SD637	N.P.N. transistor		B7
Q375	2SD637	N.P.N. transistor		A6
Q376	2SD637	N.P.N. transistor		A6
Q450	2SD637	N.P.N. transistor		A3
Q451	2SD637	N.P.N. transistor		A3
Q501	2SC1573AH	N.P.N. transistor		B3
Q502	2SB642 – PQRS	P.N.P. transistor		A2
Q503	2SD637 – QR	N.P.N. transistor		A2
Q504	2SD637 – QR	N.P.N. transistor		A1
Q540	2SB642	P.N.P. transistor		B3
Q551	2SD1439RL	N.P.N. transistor		B3
Q601	2SB642	P.N.P. transistor		C8
Q602	2SD637	N.P.N. transistor		C7
Q801	2SD637	N.P.N. transistor		C1
Q802	2SA900 – R	P.N.P. transistor		C1
Q804	2SD965	N.P.N. transistor		C1
Q1001	2SD636 – QR	N.P.N. transistor		
Q1002	2SD638 – RS	N.P.N. transistor		
Q1201	2SB642	P.N.P. transistor		H2
Q1202	2SD637	N.P.N. transistor		H1
Q1203	2SD637	N.P.N. transistor		H2
Q1205	2SD637	N.P.N. transistor		I2
Q1206	2SD637	N.P.N. transistor		I2
Q1207	2SB642	P.N.P. transistor		H2
Q1208	2SD637	N.P.N. transistor		H2
Q1212	2SD637	N.P.N. transistor		I2

COILS

L12	TLI156751	I.F.	coil	B5
L16	TLT082L991R	8.2μH	coil	B5
L101	TL010L991R	1.0μH	coil	B5
L102	TLT100K166C	10μH	coil	B6
L103	TLT047L991R	4.7μH	coil	B6
L105	TLI151757	I.F.	coil	B6
L106	TLS61353 – 1	sound	coil	B6
L151	TLI157754	I.F.	coil	B6
L201	TLS153254 – 1	sound	coil	A7
L231	TLS159054E		coil	L1
L251	TLH6865	horizontal	coil	L1
L252	TLS159054E		coil	L1
L253	TLS159054E		coil	L1
L302	TLT470K991R	47μH	coil	C7
L303	TLT220K991R	22μH	coil	C7
L351	TLT301K991R	300μH	coil	L2
L352	TLT301K991R	300μH	coil	L2
L353	TLT301K991R	300μH	coil	L2
L451	TLT082L991R	8.2μH	coil	B3
L551	TLH15759	horizontal	coil	B4
L552	TLT682K119C	6.8mH	coil	B4
L553	TLH6628P	horizontal	coil	B4
L601	TLT542K991K	5.4mH	coil	B7
L602	TLK158067	chroma	coil	C8
L603	TLK68072 – 1	chroma	coil	C8
L604	TTLT330K991R	33μH	coil	B8
L605	TLT150K991R	15μH	coil	B7
L801	TLP15560E	mains coil		L1
L802	TLP6559E	power supply	coil	B1
L851	TLS159054E		coil	B1
L1101	TLR159754	R.F.	coil	H1
L1102	TLR159753	R.F.	coil	H1
L1201	TLT082L991R	8.2μH	coil	H2
L1202	TLT082L991R	8.2μH	coil	I2
L1203	TLT082L991R	8.2μH	coil	I2
L1204	TLT082L991R	8.2μH	coil	I2
L1205	TLT082K991R	8.2μH	coil	H1

TRANSFORMERS

T501	TLH6476E	transformer	B3
T551 Ⓢ	TLF14521F	transformer	C4
T601	TLK151053	transformer	C8
T801	TLP15785	transformer	B2
T802	TLP15953E	transformer	C2
T1201	TLP16260 – 1	transformer	I2

MISCELLANEOUS COMPONENTS

DL301	TLK150867E	luminance delay line	C7
DL601	DL701	chroma delay line	C8
F801 Ⓢ	195 – 3.15	3.15 amp fuse	L1
RY1001 Ⓢ	TSE1827	relay	A1
S301	EVQR1AL13	switch	B8
S801 Ⓢ	ESB79115	switch	L1
S1001	ESD14152	switch	
S1204	EVQPTR18K	switch	I1
S1205	EVQPTR18K	switch	I1
S1206	EVQPTR18K	switch	I1
S1207	EVQQS605T	switch	I2
S1210	EVQPTR18K	switch	I1
S1211	EVQPTR18K	switch	I1
S1212	EVQPTR18K	switch	I1
S1213	EVQQS605T	switch	I2
S1215	EVQQER18G	switch	I1
S1216	EVQPTR18K	switch	I1
S1217	EVQPTR18K	switch	I1
S1218	EVQQS605T	switch	I2
S1219	EVQQER18G	switch	I1
S1220	EVQPTR18K	switch	I1
S1222	EVQQS605T	switch	I2
S1223	EVQQER18G	switch	I1
S1225	EVQPTR18K	switch	I1
S1226	EVQPTR18K	switch	I1
S1227	EVQPTR18K	switch	I1
S1228	EVQQER18G	switch	I1
X101	F1044B	S.A.W. filter	
X171	TSS120M3	4mhz crystal	C5
X201	EFCS5R5MS3	5.5MHz filter	A7
X601	TSS116M1	crystal	B7
X1001	TF0A420K03	ceramic filter	
X1201	TSS120M2	crystal filter	I2
Ⓢ	A42 – 590X1620	C.R.T.	
Ⓢ	AIP20010000M	aerial isolator	
	EAS10P133GF	speaker	
	EAS7D02S	speaker	
	MPC16CT4	packing cushion set	
	TBM17375	Panasonic badge	
	TBM17449	Panasonic badge	
	TBX2782700	channel volume knobs	
	TBX2782800	power Knob	
	TES4215	spring	
Ⓢ	A42 – 590X1620	C.R.T.	
Ⓢ	AIP20010000M	aerial isolator	

Ref. No.	Part No.	Description	Loc.
	EAS10P133GF	speaker	
	EAS7D02S	speaker	
	F1044B	S.A.W. filter	
	MPC16CT4X5	set of packing cushions	
	TBX1769200	TV/VTR knob (transmitter	
	TBX2782700	channel volume knobs	
	TBX2782800	power Knob	
	TEG37557	case top (transmitter)	
	TEG37558 – 4	case bottom (transmitter)	
	TEG37559 – 5	remote control battery cover	
	TES4215	power knob spring	
	TJC6349	battery terminal common (transmitter)	
	TKK178570	control door hinge	
	TKK178571	hinge guide	
	TKP1719861	smoked panel(right)	
	TKP1719871	tweeter smoked panel	
	TKP1719883 – 5	control panel door	
	TKP1754391	aluminium panel right	
	TKP1754401	tweeter aluminium panel	
	TKP1754751	remtte control aluminium panel	
	TKP2710021	infra red reciever smoked panel	
	TKP2710031	smoked panel	
	TKY178600 – 4	cabinet	
	TMM17569	remote control rubber mat	
	TMW17198	control bracket	
	TMW17320	power knob push plate	
	TMZ179831	chassis foot left	
	TMZ179832	chassis foot right	
◈	TNP10934	Y P.C.B.	
◈	TNP17009AB	M P.C.B.	
◈	TNP17010AA	W P.C.B.	
◈	TNP17011	N P.C.B.	
◈	TNP17104	U P.C.B.	
◈	TNP17903	R P.C.B.	
◈	TNP45141	B P.C.B.	
◈	TNP62243	L P.C.B.	
◈	TNP62244	Z P.C.B.	
◈	TNP62898AA	E P.C.B.	
◈	TNP66582BZ	P P.C.B.	
	TNQ1412 – 1	remote control transmitter	
	TPC192714	outer carton	
	TQB8E0086	operating instruction book	
	TQB8E0087	insert sheet	
	TQB8E1061	fan bag	
	TSA6108	antennae	
	TSX1126	mains lead	
	TXAKP01NEG	video terminal assembly	
	TXFLK01MEG	deguass coil	
	TXFMZ01MEG	tweeter bracket assembly	
	UV416	tuner	

Ref No.	Part No.	Description	Loc.